



WCPE
The World Conference on
Physics Education

July 1-6, 2012

Bahçeşehir Üniversitesi, İstanbul / Turkey

www.wcpe2012.org

CONFERENCE SCHEDULE

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MPTL
Multimedia in Physics
Teaching and Learning



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AsPEN
Asian Physics Education Network





JULY 1, 2012
SUNDAY

JULY 1, 2012 / SUNDAY

10:00 - 14:30 REGISTRATIONS

Parallel Session 01.01 Workshop

Date & Time: 01.07.2012 / 14:00 - 15:30

Room: D406 (3rd Floor)

PS.01.01.W **How can it be? Teaching/learning physics by interactive demonstrations**
Inese Dudareva, [Paulis Paulins](#), Ausma Bruneniece, Andrejs Salszirnis

Parallel Session 01.02 Workshop

Date & Time: 01.07.2012 / 14:00 - 15:30

Room: D505 (4th Floor)

PS.01.02.W **Low cost laboratory activities**
[Alexander F Burr](#)

Parallel Session 01.03 Workshop

Date & Time: 01.07.2012 / 14:00 - 15:30

Room: D506 (4th Floor)

PS.01.03.W **Inquiry Based Science Education for Physics teaching and learning – the ESTABLISH Approach**
[Ton Ellermeijer](#), Marian Kires, Ewa Kedzierska, Martin Lindner, Zuzana Ješková, Claudio Fazio, Leos Dvorak, Eilish Mcloughlin

15:30-16:00 **Opening Ceremony**

Plenary Session 01

Date & Time: 01.07.2012 / 16:00 - 17:00

Room: B CONF (Auditorium-I)

Session Chair: Dean Zollman

PS01 **Context and Culture**
[Edward F. \(Joe\) Redish](#)

17:00-19:00 **Welcome Cocktail**



JULY 2, 2012
MONDAY



JULY 2, 2012 / MONDAY

Plenary Session 02

Date & Time: 02.07.2012 / 09:00 - 10:00

Room: B CONF (Auditorium-I)

Session Chair: Ton Ellermeijer

PS02

How Technology Will Disrupt Physics Education

Robert F. Tinker

10:00-10:30

Coffee Break

Plenary Symposium - I

Date & Time: 02.07.2012 / 10:30 - 12:00

Room: B CONF (Auditorium-I)

Session Chairs: Francisco Esquembre & Wolfgang Christian

PS.I.a

The effect of connected computational technology on learning physics: demonstrated learning gains, reasoned expectations and thoughtful projections

Francisco Esquembre, Wolfgang Christian

PS.I.b

Motivating Computational Physics Education using Angry Birds, Rockets and Colliding Galaxies

Wolfgang Christian, Francisco Esquembre

PS.I.c

Symposium on Multimedia Teaching and Learning of Physics

Francisco Esquembre, Wolfgang Christian, Anne Cox, Sebastian Dormido, Ewa Kedzierska, Fu Kwun Hwang

12:00-13:00

LUNCH BREAK

Parallel Session 02.01 Workshop

Date & Time: 02.07.2012 / 13:00 - 14:30

Room: D501 (4th Floor)

PS.02.01.W

Modeling What You See with Tracker

Anne J Cox

PS.02.02.a

The Cosmological principle as a tool for teaching modern Physics concepts in Primary Education

Aristeidis Kosionidis, Maria Tzani

Parallel Session 02.02

Date & Time: 02.07.2012 / 13:00 - 14:30

Room: D404 (3rd Floor)

Session Chair: Kadir Demir

PS.02.02.b

Contextual approach for teaching physics to non-major primary school student teachers

Siti Hendon Sheikh Abdullah

PS.02.02.c

Curriculum Innovation and Enhancement in the new Applied Physics Degree at the University of Portsmouth UK

Christopher Dewdney

PS.02.02.d

Overcoming Academic Misconceptions about the Learning and Teaching of Physics

Alexander Peter Mazzolini, Llewellyn Mann, Scott Daniel

JULY 2, 2012 / MONDAY

Parallel Session 02.03

Date & Time: 02.07.2012 / 13:00 - 14:30

Room: D405 (3rd Floor)

Session Chair: Paulo H. Acioli

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|-------------------|---|
| PS.02.03.a | Air Table: A Redesign of a Educational Laboratory Set
<u>John Şefik Roach</u> |
| PS.02.03.b | Experiential Learning of Classical Mechanics Through Molecular Dynamics
<u>Paulo H Acioli, Sudha Srinivas</u> |
| PS.02.03.c | Teaching Physics with Soccer
<u>Fabrizio Logiurato, Luigi Gratton, Mauro Rossi</u> |
| PS.02.03.d | Smartphones used as individual experimental platforms when teaching classical mechanics
<u>Joel Chevrier, Simon Ledenmat, Laya Madani, Ahmad Bsiesy</u> |

Parallel Session 02.04

Date & Time: 02.07.2012 / 13:00 - 14:30

Room: D401 (3rd Floor)

Session Chair: Josef Trna

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|-------------------|--|
| PS.02.04.a | Explicitly Emphasizing Metacognition and Epistemology in Inquiry-Based Physics Teaching: The Impacts on Students' Epistemological Understandings
<u>Sevda Yerdelen Damar, Ali Eryilmaz</u> |
| PS.02.04.b | IPITHIA - a new active learning strategy for a repetition course in mechanics for freshmen
<u>Dagmara Sokolowska</u> |
| PS.02.04.c | Investigation of the Effect of Students' Motivational Beliefs on their Metacognitive Self Regulation in Physics Courses
<u>Ebru Balta, Deniz Gürçay, Oğuz Doğan</u> |
| PS.02.04.d | Taxonomy of Physics Experiments in Inquiry-Based Science Education
<u>Josef Trna</u> |

Parallel Session 02.05

Date & Time: 02.07.2012 / 13:00 - 14:30

Room: D402 (3rd Floor)

Session Chair: Wilfredo T. Lacambra

- | | |
|-------------------|---|
| PS.02.05.a | An inventory on angular velocity of a particle
<u>Mashood Kk, Vijay A Singh</u> |
| PS.02.05.b | Validating a Japanese Version of FCI with Cognitively Sequenced Questions
<u>Jun Ichiro Yasuda, Masa Aki Taniguchi</u> |
| PS.02.05.c | Link Maps: Exploring the knowledge structures of introductory physics
<u>Christine Lindstrøm</u> |
| PS.02.05.d | Factors Associated With Physics Achievement Of Engineering Students In Ama International University-Bahrain
<u>Wilfredo T. Lacambra</u> |

Parallel Session 02.06 Symposium

Date & Time: 02.07.2012 / 13:00 - 14:30

Room: D502 (4th Floor)

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|-------------------|---|
| PS.02.06.S | Pbl in mechanics: some results of a controlled experiment
<u>Poutot Géraldine, Bacila Adriana, Ageorges Philippe, Blandin Bernard</u> |
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JULY 2, 2012 / MONDAY

Parallel Session 02.07 Workshop

Date & Time: 02.07.2012 / 13:00 - 14:30

Room: D504 (4th Floor)

PS.02.07.W **Improve learning by using demonstrations**
Matthew Bobrowsky

Parallel Session 02.08 Workshop

Date & Time: 02.07.2012 / 13:00 - 14:30

Room: D505 (4th Floor)

PS.02.08.W **Communicating Nature of Science: "Hidden Container", an example for "black box" experiments in Science**
Mansour Vesali

Parallel Session 02.09

Date & Time: 02.07.2012 / 13:00 - 14:30

Room: D403 (3rd Floor)

Session Chair: Sarantos Psycharis

PS.02.09.a **Computer Models Design for Teaching and Learning using Easy Java Simulation**
Loo Kang Lawrence Wee, Ai Phing Lim, Khoon Song Aloysius Goh, Matthew Ong, Sze Yee Lye, Tat Leong Lee, Weiming Xu, Giam Hwee Jimmy Goh, Chee Wah Ong, Soo Kok Ng, Ee Peow Lim, Chew Ling Lim, Wee Leng Joshua Yeo, Yang Teck Kenneth Lim

PS.02.09.b **Teaching High School Physics with OVPLE – The Online Virtual Physics Learning Environment**
Mehmet Fatih Taşar, Betül Timur, Şebnem Kandil İnğöç, Muhammet Uşak, Mehmet Akif Oçak, Ahmet İlhan Şen

PS.02.09.c **Attempts of transforming teacher practice through professional development**
Vera Montalbano, Roberto Benedetti, Emilio Mariotti, Maria Alessandra Mariotti, Antonella Porri

PS.02.09.d **Modelling Indicators and Metacognition Skills in Computational Science Inquiry Based Environments**
Sarantos Psycharis, Athanasios Kyriazis

Parallel Session 02.10 Symposium

Date & Time: 02.07.2012 / 13:00 - 14:30

Room: D506 (4th Floor)

PS.02.10.S **Teaching and learning the concept of energy from early childhood school through university: PART I**
Marisa Michelini, Paula Heron, Lillian C Mcdermott

14:30-14:40 **SHORT BREAK**

JULY 2, 2012 / MONDAY

Parallel Session 03.01

Date & Time: 02.07.2012 / 14:40 - 16:10

Room: D402 (3rd Floor)

Session Chair: Taha Mzoughi

PS.03.01.a	UNEDLabs: An Example of EJS Labs Integration Into Moodle <u>Luis De La Torre</u> , Rubén Heradio, Juan Pedro Sánchez, José Sánchez, Carmen Carreras, Manuel Yuste, Sebastián Dormido
PS.03.01.b	Understanding the effects of the light propagation through a 3D virtual environment: a first step to grasp the special relativity <u>Clément Maisch</u> , Cécile De Hosson, Isabelle Kermen
PS.03.01.c	Science at School at a Distance of a Click Rosa Doran, <u>Telma Esperança</u> , João Fernandes
PS.03.01.d	Using Technology to promote student learning inside and outside the classroom <u>Taha Mzoughi</u>

Parallel Session 03.02

Date & Time: 02.07.2012 / 14:40 - 16:10

Room: D403 (3rd Floor)

Session Chair: Rainer Mueller

PS.03.02.a	Analysing students' reasoning in electromagnetism <u>Katarina Jelicic</u> , Gorazd Planinsic, Maja Planinic
PS.03.02.b	Transmission of Sine Waves or of Pulses What is easier to understand? What is more adequate for the digital world? <u>Hermann Haertel</u> , Ernesto Martín Rodríguez
PS.03.02.c	Magnetic field nature and magnetic flux changes in building formal thinking at secondary school level <u>Stefano Vercellati</u> , Marisa Michelini
PS.03.02.d	A semiquantitative treatment of surface charges in DC circuits <u>Rainer Mueller</u>

Parallel Session 03.03

Date & Time: 02.07.2012 / 14:40 - 16:10

Room: D501 (4th Floor)

Session Chair: Leos Dvorak

PS.03.03.a	Analysing motion of falling magnet with video measurement tools <u>Tomasz Greczylo</u>
PS.03.03.b	Personal touch with electric resistance <u>Katarina Susman</u> , David Rihtarsic, Tomaz Kusar
PS.03.03.c	Experiments with a non-traditional charge indicator <u>Leos Dvorak</u> , Gorazd Planinsic
PS.03.03.d	Nonlinear optical second harmonic generation as an advanced undergraduate experiment <u>Ivan S. Ruddock</u>

JULY 2, 2012 / MONDAY

Parallel Session 03.04

Date & Time: 02.07.2012 / 14:40 - 16:10

Room: D404 (3rd Floor)

Session Chair: Simon Langlois

PS.03.04.a	The Effects of Instructor Autonomy Support on the Quality of the Student Experience in Introductory Physics <u>Nicholas Hall</u> , David Webb
PS.03.04.b	A Literature Review of Affective Variables in Physics Education: What Are The Affective Needs of Learners? <u>Zeynep Tugba Kahyaoglu</u>
PS.03.04.c	The need to encourage FET Natural Science Teaching Profession students at university to study Physics as a major <u>Itumeleng Phage</u>
PS.03.04.d	Fostering better engagement among male and female students in the physics laboratory <u>Simon Langlois</u> , Guy Corriveau

Parallel Session 03.05

Date & Time: 02.07.2012 / 14:40 - 16:10

Room: D406 (3rd Floor)

Session Chair: Mauricio Pietrocola

PS.03.05.a	Context-based physics education and learning with newspaper based and other authentic learning problems: An empirical study <u>Andreas Müller</u> , Jochen Kuhn, Patrik Vogt
PS.03.05.b	The importance of teachers' questions in inquiry-based physics classes: building categories based on references of the area Lucia Helena Sasseron, <u>Vitor Fabricio Machado</u>
PS.03.05.c	Actions and Strategies Elementary School Teachers use to Foster Argumentation and Scientific Literacy in Inquiry-Based Classes <u>Amanda Mendes</u> , Lucia Helena Sasseron
PS.03.05.d	Teacher education in the context of modern and contemporary physics: an experience with public system teachers Maxwell Siqueira, <u>Mauricio Pietrocola</u>

Parallel Session 03.06

Date & Time: 02.07.2012 / 14:40 - 16:10

Room: D405 (3rd Floor)

Session Chair: Ramanathan Subramaniam

PS.03.06.a	The Expo-Laboratory "The sound of the Earth, tools, games, harmonies and rhythms" - an original and effective inquiry approach to discover the magic of the waves <u>Occhipinti Susanna</u>
PS.03.06.b	Discover the COSMOS: e-Infrastructures for an Engaging Science Classroom <u>Peter M. Watkins</u>
PS.03.06.c	Using Common Formative Assessments with Middle/High School Students to Inform Pedagogical Approaches for Teaching Scientific Content <u>Jennifer Esswein</u> , Gordon J. Aubrecht, II, Bill Schmitt
PS.03.06.d	Students' conceptions of gravity and gravitation <u>Siew Lin Lee</u> , Ramanathan Subramaniam

JULY 2, 2012 / MONDAY

Parallel Session 03.07 Workshop

Date & Time: 02.07.2012 / 14:40 - 16:10

Room: D502 (4th Floor)

PS.03.07.W

The inclusion of environmental issues is an important component of science education; we developed the course for science teachers, the goal was to improve the quality of learning of climate by laboratory activities

Jindřiska Svobodová, Jan Hollan, Tomáš Milér

Parallel Session 03.08 Workshop

Date & Time: 02.07.2012 / 14:40 - 16:10

Room: D504 (4th Floor)

PS.03.08.W

Environmental Physics

David Gewanter

Parallel Session 03.09 Workshop

Date & Time: 02.07.2012 / 14:40 - 16:10

Room: D505 (4th Floor)

PS.03.09.W

Cognitive test as a tool for physics learning

Konstantin Rogozin, Sergey Kuznetsov, Diana Kondrashova, Irina Lisina

Parallel Session 03.10 Symposium

Date & Time: 02.07.2012 / 14:40 - 16:10

Room: D506 (4th Floor)

PS.03.10.S

Teaching and learning the concept of energy from early childhood school through university: PART II

Marisa Michelini, Paula Heron, Lillian C Mcdermott

Parallel Session 03.11

Date & Time: 02.07.2012 / 14:40 - 16:10

Room: D401 (3rd Floor)

Session Chair: Dimitrios Stavrou

PS.03.11.a

Demonstrations can increase learning...or not

Matthew Bobrowsky

PS.03.11.b

Why are experiments and theory both necessary?

Nada Razpet, Tomaz Kranjc

PS.03.11.c

How to make content easier for the student

Tomaz Kranjc, Nada Razpet

PS.03.11.d

Teaching and Learning Modern Physics Concepts to Primary Student Teachers

Dimitrios Stavrou

16:10 – 16:30

COFFEE BREAK

Parallel Session 04.01 Symposium

Date & Time: 02.07.2012 / 16:30 - 18:00

Room: D501 (4th Floor)

PS.04.01.S

Understanding teachers' perceptions and pedagogical knowledge for introducing scientific argumentation to science classes: A tentative result from the Korean and Japanese case studies

Junehee Yoo, Heui Baik Kim, Youngdal Cho, Eizo Ohno, Kazuyuki Asakawa, Jee Young Park, Seyoung Hwang, Dong Wook Lee, Enu Hee Lim, Sun Mi Yun

JULY 2, 2012 / MONDAY

Parallel Session 04.02 Symposium

Date & Time: 02.07.2012 / 16:30 - 18:00

Room: D502 (4th Floor)

PS.04.02.S

A Developed Teaching Model for Metacognitive Thinking: Developed Metacognitive Learning Cycle

Eman Mohammad Alrwaythi

Parallel Session 04.03 Symposium

Date & Time: 02.07.2012 / 16:30 - 18:00

Room: D504 (4th Floor)

PS.04.03.S

The role of physics education for sustainable development in the context of developing countries: challenges and opportunities

Aziz Fatima Hasnain, Alex Mazzolini, Pratibha Jolly, Manjula Sharma, Shamima Chaudhry

Parallel Session 04.04 Symposium

Date & Time: 02.07.2012 / 16:30 - 18:00

Room: D505 (4th Floor)

PS.04.04.S

Changing Perspectives Through Interactions of Diverse Communities

Arnaldo M Vaz, Edward (Joe) F Redish, Josimeire M Júlio, Chandra A Turpen, Vashti Sawtelle, Julia Svoboda, Benjamin W Dreyfus, Benjamin D Geller, Todd J Cooke, Dean A Zollman

Parallel Session 04.05 Symposium

Date & Time: 02.07.2012 / 16:30 - 18:00

Room: D506 (4th Floor)

PS.04.05.S

Teaching and learning the concept of energy from early childhood school through university: PART III

Marisa Michelini, Paula Heron, Lillian C Mcdermott

WG-I.01

Date & Time: 02.07.2012 / 16:30 - 18:00

Room: D404 (3rd Floor)

Session Chair: Ronald K. Thornton

WG-I.01

Workgroup I: Pedagogical Value of Using Computers to Learn Physics

Ronald K. Thornton

WG-II.01

Date & Time: 02.07.2012 / 16:30 - 18:00

Room: D405 (3rd Floor)

Session Chair: Elena Sassi

WG-II.01

Workgroup II: Developing the teachers: physics PCK development across a career

Elena Sassi



JULY 3, 2012
TUESDAY



JULY 3, 2012 / TUESDAY

Plenary Session 03

Date & Time: 03.07.2012 / 09:00 - 10:00

Room: B CONF (Auditorium-I)

Session Chair: Ton Ellermeijer

PS03

Curriculum Development in Physics: Not Quite so Fast

Jon Ogborn

10:00-10:30

Coffee Break

Plenary Symposium - II

Date & Time: 03.07.2012 / 10:30 - 12:00

Room: B CONF (Auditorium-I)

Session Chair: Maarten Pieters

PS.II.a

Plenary Symposium II: Developing curricula whilst respecting research insights

Maarten Pieters

12:00-13:00

LUNCH BREAK

Poster Session - 1.01

Date & Time: 03.07.2012 / 13:00 - 14:00

Room: D406 (3rd Floor)

P1.G01.01

Science with sensors in primary schools

Ewa Kedzierska, Ton Ellermeijer

P1.G01.02

Problems associated with the use of multiple representations in a high school physics course, within the traditional context

Guillermo Neumann, Pilar Segarra

P1.G01.03

POOLkits: Applying Object Oriented Principles from Software Engineering to Physics Object Oriented Learning – Preliminary Concepts

Thomas J. Kassebaum, Gordon J. Aubrecht, II

P1.G01.04

Wolfram Mathematica in Theoretical Physics

Radim Kusak

P1.G01.05

The key competences and teaching physics with the ICT for IST Pack

Elzbieta Kawecka, Ewa Kedzierska, Hildegard Urban Woldron

P1.G01.06

Demonstration of the heat with the ICT based real-time thermo viewer camera for elementary school

Naoshi Takahashi, Masazumi Mori

P1.G01.07

Multimedia enhanced physics lecture experiments (ePhEx)

Guillaume Schiltz

Poster Session - 1.02

Date & Time: 03.07.2012 / 13:00 - 14:00

Room: D406 (3rd Floor)

P1.G02.01

Discursive Interactions between Teacher and Students in Physics Classes and Construction of Arguments

Lucia Helena Sasseron, Arthur Tadeu Ferraz

P1.G02.02

Misconceptions of Scientifically-gifted in physics

Hyun Sook Choi, Jung Bok Kim

JULY 3, 2012 / TUESDAY

P1.G02.03	Teaching about energy. Which concepts should be taught at which educational level? <u>Marisa Michelinj</u> , Paula Heron, Bat Sheva Eylon, Yaron Lehavi, Alberto Stefanel
P1.G02.04	Dismantling rainbow <u>Maria Bondani</u> , Fabrizio Favale
P1.G02.05	Teaching concepts of electromagnetism, optics and modern physics through situations in medicine <u>Mara Fernanda Parisoto</u> , Marco Antonio Moreira, José Tullio Moro
P1.G02.06	The Coherent Structure of Classroom Discourse in Teaching Physics Concepts <u>Eizo Ohno</u>
P1.G02.07x	Students Mini-Projects Based on the Scientific Method in Treatment Theme Temperature and Heat <u>Ivana Rancic</u> , Dusanka Z. Obadovic, Mirjana Segedinac, Stanko Cvjeticanin
Poster Session - 1.03	
Date & Time: 03.07.2012 / 13:00 - 14:00	
Room: D406 (3rd Floor)	
P1.G03.01	Modeling Activities with Prospective Physics Teachers <u>Nilufer Didis</u> , Ufuk Yildirim
P1.G03.02	Reproducing joule's experiment(s) in teaching the concept of energy <u>Yaron Lehavi</u>
P1.G03.03	Anisotropy is everywhere <u>Sasa Zihertl</u> , Jerneja Pavlin, Jurij Bajc, Natasa Vaupotic, Mojca Cepic
P1.G03.04	A comprehensive assessment strategy for physics laboratory courses <u>Rajesh Bhaskar Khaparde</u>
P1.G03.05	An Inquiry Based Approach to the study of concept of distribution in statistical mechanics <u>Onofrio Rosario Battaglia</u> , Claudio Fazio
P1.G03.06x	Horizontal and Vertical Inversions of Real Images by Curved Surfaces <u>Hakan İşık</u>
P1.G03.07x	Cautions to adopt when using a digital camera in the lab <u>Stefano Oss</u> , Mauro Rossi, Luigi Maria Gratton
Poster Session - 1.04	
Date & Time: 03.07.2012 / 13:00 - 14:00	
Room: D406 (3rd Floor)	
P1.G04.01x	An Investigation of New Turkish High School Physics Curriculum in the Context of its Philosophy <u>Sadık Ahrazoğlu</u> , Murat Akyüz, Ersoy Karabay, Mehmet Yusuf, Kuddusi Gedik
P1.G04.02	Prospective Science Teachers' Misconceptions about Energy <u>Dilek Erduran Avcı</u> , Dilek Karaca
P1.G04.03	Learning physics and astronomy in a middle school class: a design experiment <u>Sabrina Rossi</u> , Enrica Giordano, Nicoletta Lanciano
P1.G04.04x	Mass from classical physics to special relativity: learning results <u>Emanuele Pugliese</u> , Lorenzo Gianni Santi
P1.G04.05	Investigating thermoimaging in augmented multisensory learning about heat transfer <u>Konrad Schönborn</u> , <u>Jesper Haglund</u> , Charles Xie

JULY 3, 2012 / TUESDAY

P1.G04.06	Reasoning and models of talented students on electrical transport in solids <u>Giuseppe Fera</u> , Marisa Michelini, Stefano Vercellati
Poster Session - 1.05 Date & Time: 03.07.2012 / 13:00 - 14:00 Room: D406 (3rd Floor)	
P1.G05.01x	Incidence of the differential rotation of plasma in the solar magnetic field <u>Edgar David Guarín</u> , Néstor Fernando Méndez
P1.G05.02	The evaluation of a basic training text-book on physics with method of entry and drill for university students majoring in liberal arts <u>Katsuichi Higuchi</u>
P1.G05.03	Using the Force Concept Inventory and the Force and Motion Conceptual Evaluation to assess the effectiveness of the interactive engagement approach in introductory physics instruction at a Japanese university <u>Michi Ishimoto</u>
P1.G05.05	A proposal of learning based on projects and problem solving on musical acoustics <u>Erica Macho Stadler</u> , M ^a Jesús Elejalde García
P1.G05.06	Project based learning in Architectural Acoustics <u>M^a Jesús Elejalde García</u> , Erica Macho Stadler
P1.G05.07	Solid state physics - new approach in the Electromobility programme <u>Tomas Vitu</u> , Martin Scholtz, Zuzana Mala, Danuse Novakova
P1.G05.08	Undergraduate Students' Perceptions of the Introductory Physics Laboratories <u>Elif Ozulku</u> , Emine Adadan
P1.G05.09	Comparing different teaching approaches about Maxwell's displacement current <u>Maurício Pietrocola</u> , Ricardo Karam, Debora Coimbra
P1.G05.10	Transparent anisotropic materials in monochromatic and white light <u>Maja Pecar</u> , Vitomir Babic, Mojca Cepic;
P1.G05.11	Mechanics Online: Introductory Physics Course Focused on Problem Solving <u>Saif Rayyan</u> , Analia Barrantes, Raluca Teodorescu, Daniel Seaton, Yoav Bergner, Andrew Pawl, Stephan Dröschler, Gerd Kortemeyer, David Pritchard
Poster Session - 1.06 Date & Time: 03.07.2012 / 13:00 - 14:00 Room: D406 (3rd Floor)	
P1.G06.01	Hidden elements influencing the teacher candidates' ideas about concept mapping <u>Özgür Özcan</u> , Nilüfer Didiş
P1.G06.02	Integrating multiple modes of representation into physics teacher education through digital video analysis <u>Richard Hechter</u>
P1.G06.03	Fostering understanding of basic electricity concepts by integrating the teaching-experiment methodology into pre-service teacher training programs <u>Hildegard Urban Woldron</u> , Veronika Valenta

JULY 3, 2012 / TUESDAY

Poster Session - 1.07

Date & Time: 03.07.2012 / 13:00 - 14:00

Room: D406 (3rd Floor)

P1.G07.01	Reception study of a video produced as a physics didactic laboratory activity <u>Marcus Vinicius Pereira</u> , Luiz Augusto Coimbra de Rezende Filho, Américo de Araújo Pastor Junior
P1.G07.02	Universe hitchhikers: Designing and enacting astronomy-based curriculum in a Brazilian suburban middle school <u>Daniela Borges Pavani</u> , Fabiane Borges Pavani, Daniel Flach, Felipe Selau, Izadora Fontoura, Josiane De Souza, Marco Vargas, Paulo Lima Junior, Priscila Chaves Panta, Rafael Acker
P1.G07.03	The heuristic algorithms based on metaphors in physics education <u>Havva Sibel Kurt</u> , Musa Sari
P1.G07.04	ANATOLIA: the land where Science was born and flourished <u>Hatice Kirmaci</u> , Arzu Calik Seydim, Füsün Ebru Özcan
P1.G07.05x	Physics in Initial Civilization <u>Farahnaz Kiani</u>
P1.G07.06x	Inflationary scenario of origin and development of the Universe: ukrainian contribution <u>Oksana Koltachykhina</u>
P1.G07.07	Teaching Materials along with History of Science – Electricity and Magnetism – <u>Masako Tanemura</u>

Poster Session - 1.08

Date & Time: 03.07.2012 / 13:00 - 14:00

Room: D406 (3rd Floor)

P1.G08.01	The role of the 21st Century Science syllabus in promoting the interest of non-science students in Physics: A case study in the island of Mauritius <u>Sarojiny Saddul Hauzaree</u>
P1.G08.02x	The effect of incorporating indigenous knowledge related to Physics concepts into Grade 9 science curriculum on the attitudes of students in Chókwé, Mozambique <u>Aguiar Baquete</u> , Diane Grayson, Inocente Mutimucuo
P1.G08.03	Cooperative physics learning and International Sciences Development in Beregadougou, Burkina Faso <u>Simon Langlois</u> , Zimba Tassere, Catherine Malo, Jean Pierre Miron
P1.G08.04	The Secure project researches science curricula and teachers' and learners' opinions on science education <u>Dagmara Sokolowska</u> , Wim Peeters
P1.G08.05	An Analysis of the Potentialities of a Scientific Literature Book on Physics Teaching <u>Cristina Leite</u> , Fernanda Marchi
P1.G08.06x	Physics - What does it mean? <u>Muhammed Sait Gökalp</u>
P1.G08.07	Implementation of a teaching-learning sequence about greenhouse effect: How to take into account teachers' points of view? <u>Meriam Triki</u> , Colin Philippe

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14:00-14:10		SHORT BREAK
Parallel Session 05.01 Date & Time: 03.07.2012 / 14:10 - 15:40 Room: D501 (4th Floor) Session Chair: Vítor Duarte Teodoro		
PS.05.01.a	Exploring the rolling shutter effect using a computer scanner <u>Bor Gregorcic</u> , Gorazd Planinsic	
PS.05.01.b	Animations of spacecrafts' flights <u>Tomáš Franc</u>	
PS.05.01.c	Design, implementation and evaluation of three-dimensional models in autocad for the understanding of the maxwell equations in differential form <u>Angel Antonio Rojas Garcia</u> , Sonia Janeth Lopez Rios, Juan Pablo Oviedo Roa, Ronald Gilberto Marquez Rivera, Michael Alexis Parra, Dairo Osorio Quiroga	
PS.05.01.d	Teaching physics and mathematics for earth sciences with computational modelling <u>Rui Gomes Neves</u> , Maria C. Neves, Vítor Duarte Teodoro	
Parallel Session 05.02 Workshop Date & Time: 03.07.2012 / 14:10 - 15:40 Room: D502 (4th Floor)		
PS.05.02.W	Nuclear physics in the Karlsruhe Physics Course (KPK) – a unified approach for the secondary school <u>Friedrich Herrmann</u> , Michael Pohlig	
Parallel Session 05.03 Date & Time: 03.07.2012 / 14:10 - 15:40 Room: D504 (4th Floor) Session Chair: Ian Lawrence		
PS.05.03.a	Phy-scopes - physics through integrated computer-oriented problems and hands-on experiments <u>Christophe Leys</u> , Patrick Vanraes, Geert Verdoolaege	
PS.05.03.b	Looking at optics through the lens of inquiry Tim Maley, <u>Will Stoll</u> , Abdulkadir Demir	
PS.05.03.c	A high school teaching/learning sequence on normal modes <u>Stellato Marco</u> , Giliberti Marco, Rigon Enrico	
PS.05.03.d	Preservice Physics Teachers' Representations Regarding the Whole Processes of Thermoacoustic Refrigeration <u>Dong Uk Lee</u> , Junehee Yoo	
Parallel Session 05.04 Date & Time: 03.07.2012 / 14:10 - 15:40 Room: D505 (4th Floor) Session Chair: Marisa Michelini		
PS.05.04.a	Energy transformations in primary school: outcomes from a research based experimentation of an educational proposal <u>Francesca Leto</u>	
PS.05.04.b	Primary school physics, great challenge and great chance - developing of the new university seminar for future primary school teachers <u>Zdenek Drozd</u> , Dana Mandikova	

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PS.05.04.c	OBJECT LITERACY: An important skill for primary school physics learning <u>Masood Sadrolashrafi</u>
PS.05.04.d	Can Einsteinian concepts be taught in primary schools? <u>David Blair</u> , Grady Venville, Marina Pitts, Bernie Carr, Marjan Zadnik
Parallel Session 05.05 Date & Time: 03.07.2012 / 14:10 - 15:40 Room: D506 (4th Floor) Session Chair: Cedric Linder	
PS.05.05.a	A case study of the role of representations in enabling and constraining the sharing of physics knowledge in peer discussions <u>Tobias Fredlund</u> , John Airey, John Airey, Cedric Linder, Cedric Linder
PS.05.05.b	A cross sectional study of university students multiple representational ability <u>Manjula Devi Sharma</u> , Matthew Hill
PS.05.05.c	Who needs 3D when the Universe is flat? <u>Urban Eriksson</u> , Cedric Linder, John Airey, Andreas Redfors
PS.05.05.d	How well do first year university students learn to use multiple representations of physics concepts for understanding and problem solving? David Treagust, Yen Ruey Kuo, Mihye Won, Salim Siddiqui, <u>Marjan Zadnik</u>
Parallel Session 05.06 Date & Time: 03.07.2012 / 14:10 - 15:40 Room: D404 (3rd Floor) Session Chair: Elena Sassi	
PS.05.06.a	Discovering the Law of Refraction: a Guided-Inquiry Approach with a Counterpart in the History of Physics <u>David Schuster</u>
PS.05.06.b	Models' construction of historical scientific instruments as part of Physics' teaching in Greece: Measuring and Interpreting Nature within History <u>Manolis KARTSONAKIS</u>
PS.05.06.c	The Development of Undergraduate Students' Perceptions of Physics and Physicists <u>Anton Rayner</u>
PS.05.06.d	Geometric historical approach to investigate celestial bodies with a full Digital Planetarium <u>Elena Sassi</u> , Luigi A. Smaldone, Pietro Di Lorenzo, Ilaria Ricchi
Parallel Session 05.07 Date & Time: 03.07.2012 / 14:10 - 15:40 Room: D405 (3rd Floor) Session Chair: Marina Castells	
PS.05.07.a	Use of graphics and tables in argumentation written task about a sources of energy dilemma in secondary school <u>Marina Castells</u> , Aikaterini Konstantinidou, Sandra Gilabert
PS.05.07.b	Comparison of Turkish and American Students' Attributions of Success/ Failure in Modern Physics <u>Nilufer Didis</u> , Edward F. (Joe) Redish
PS.05.07.c	A model of conceptual distribution for physics education <u>Alexsandro Pereira De Pereira</u> , Fernanda Ostermann

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PS.05.07.d	The Popularization of National Science as an Important Factor of Students Engagement <u>Ivã Gurgel</u> , Graciella Watanabe, Mauricio Pietrocola
PS.05.07.e	Physics Education in Decline: an international perspective and the Irish context <u>Yurgos Politis</u>
Parallel Session 05.08 Workshop Date & Time: 03.07.2012 / 14:10 - 15:40 Room: D406 (3rd Floor)	
PS.05.08.W	Charges and capacitors – hands-on minds-on approach <u>Leos Dvorak</u>
Parallel Session 05.09 Date & Time: 03.07.2012 / 14:10 - 15:40 Room: D402 (3rd Floor) Session Chair: Mansour Vesali	
PS.05.09.a	Activities and Research for Attracting Girls and School Teachers to Physics by LADY CATS and Science Teachers Groups <u>Haruka Onishi</u> , Masako Tanemura, Kyoko Ishii, Fumiko Okiharu, Masaaki Taniguchi, Junichiro Yasuda, Mika Yokoe, Hiroshi Kawakatsu
PS.05.09.b	An Investigation of Prospective Teachers' Views on Implementing a Science Writing Heuristics in Physics Laboratories <u>Dilek Erduran Avci</u> , Dilek Karaca, Tolga Akçay
PS.05.09.c	Degrees of freedom in physics laboratory work – teacher's and students' experiences <u>Jan Andersson</u> , Margareta Enghag
PS.05.09.d	Identifying the strong and weak points in students' schemas regarding kinematic graphs <u>Mansour Vesali</u> , Noushin Nouri
Parallel Session 05.10 Date & Time: 03.07.2012 / 14:10 - 15:40 Room: D403 (3rd Floor) Session Chair: Asim Gangopadhyaya	
PS.05.10.a	Bringing the world's largest science experiment into the classroom <u>Konrad Jende</u>
PS.05.10.b	Informal learning in CLOE Labs to build the basic conceptual knowledge of magnetic phenomena <u>Sri Rama Chandra Prasad Challapalli</u> , Marisa Michelini, Stefano Vercellati
PS.05.10.c	International Masterclasses 'Hands on Particle Physics' - The Portuguese Approach <u>Maria Conceicao Abreu</u> , Pedro Abreu, Fernando Barao, Joao Carvalho, Ana Guerreiro, Amelia Maio, Fernando Mota, Antonio Onofre, Luis Peralta, Ana Pereira, Mario Pereira, Robertus Potting, Joao Santos, Joao Seixas, Sandra Soares, Filipe Veloso, Joao Veloso
PS.05.10.d	Students of the 21st century learning science: The use of Frankenstein and theater to teach Science and Philosophy <u>Márcio Nasser Medina</u> , Gastão Galvão
PS.05.10.e	Undergraduate Research: What is it? <u>Asim Gangopadhyaya</u>
15:40 – 16:00	COFFEE BREAK

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Parallel Session 06.01

Date & Time: 03.07.2012 / 16:00 - 17:30

Room: D404 (3rd Floor)

Session Chair: André Heck

PS.06.01.a	Authentic Problems for authentic assessment in Physics Education <u>Jeremias Weber</u> , Andre Bresges
PS.06.01.b	Fostering pre-service science teachers' TPKC and computer self-efficacy beliefs in teaching middle school physics subjects <u>Betül Timur</u> , Mehmet Fatih Taşar
PS.06.01.c	Mastery Blended Learning: Achieving Breakthrough in Learning Physics <u>Chiu Wai Chow</u> , Elaine Chapman
PS.06.01.d	Realizing Authentic Inquiry Activities with ICT <u>André Heck</u> , Ton Ellermeijer

Parallel Session 06.02

Date & Time: 03.07.2012 / 16:00 - 17:30

Room: D405 (3rd Floor)

Session Chair: Dean A Zollman

PS.06.02.a	Students' Conceptions About the Topic 'Radiation' - Results from an Explorative Interview Study <u>Susanne Neumann</u> , Hopf Martin
PS.06.02.b	Teaching different aspects of light in the unified framework of quantum mechanics <u>Marcelo José Fabián Arlego</u> , Maria De Los Angeles Fanaro, María Rita Otero
PS.06.02.c	Quantum physics education enlightens physics education <u>Marco Alessandro Giliberti</u>
PS.06.02.d	Alexander Graham Bell and the assassination of US President Garfield: Teaching the physics of early attempts at medical imaging <u>Dean A Zollman</u> , Johannes V.d. Wirjawan, Sytil Murphy

Parallel Session 06.03 Workshop

Date & Time: 03.07.2012 / 16:00 - 17:30

Room: D406 (3rd Floor)

PS.06.03.W	Inquiry SKILLS for physics classrooms <u>Masood Sadrolashrafi</u> , Mehri Mirzaee Rafea
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Parallel Session 06.04

Date & Time: 03.07.2012 / 16:00 - 17:30

Room: D402 (3rd Floor)

Session Chair: Toru Suzuki

PS.06.04.a	Comparison of Cognitive Conflict on Peer Instruction by Middle School Science Gifted Students and Non-Gifted Students <u>Jungsook Lee</u> , Eunhee Ryoo, Jungbog Kim
PS.06.04.b	Documenting the range and strengths of alternative conceptions harbored by junior college students in gravitation through the use of a novel 4-tier diagnostic instrument <u>Subramaniam Ramanathan</u> , Siew Lin Lee
PS.06.04.c	The role of girls in balancing boys' engagement in investigative physics high school activities <u>Josimeire Meneses Julio</u> , Arnaldo De Moura Vaz

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PS.06.04.d	The radiation education of today in japan <u>Toru Suzuki</u>
Parallel Session 06.05 Date & Time: 03.07.2012 / 16:00 - 17:30 Room: D403 (3rd Floor) Session Chair: Michael Pohlig	
PS.06.05.a	Temperature dependence of Foucault dissipation studied through video-analysis <u>Assunta Bonanno</u> , G. Bozzo, M. Camarca, P. Sapia
PS.06.05.b	A New Way of Teaching the Special Theory of Relativity <u>Michael Pohlig</u>
PS.06.05.c	Why it is important to publish 'null' results: A project involving no change in learning gains from Interactive Lecture Demonstrations in first year thermal physics <u>Helen Georgiou</u> , Manjula Devi Sharma
PS.06.05.d	The Application Levels of Physics, Chemistry and Biology Prospective Teachers Zeroth and First Laws of Thermodynamics on Daily Events <u>Vahide Nilay Kirtak Ad</u> , Neşet Demirci
Parallel Session 06.06 Date & Time: 03.07.2012 / 16:00 - 17:30 Room: D501 (4th Floor) Session Chair: Feral Ogan Bekiroglu	
PS.06.06.a	Understanding pre-service physics teachers' conceptions on nature of science <u>Özlem Oktay</u> , Ali Eryılmaz
PS.06.06.b	Physics is cultural arbitrary: An example from historical criticism on Newton's mechanics <u>Paulo Lima Junior</u> , Fernanda Ostermann
PS.06.06.c	A Study on the Epistemological Beliefs of the A-Grade Students and the Local Teachers Surrounding Rajahmundry, India <u>Nageswar Rao Chekuri</u> , Ramani V Pilaka, Eugene Allevato
PS.06.06.d	Physics Students' Epistemological Beliefs and Their Conceptual Change <u>Feral Ogan Bekiroglu</u> , Ercan Kaymak
Parallel Session 06.07 Workshop Date & Time: 03.07.2012 / 16:00 - 17:30 Room: D502 (4th Floor)	
PS.06.07.W	An Alternative Way to Teach "Oscillation and Waves" <u>Hermann Haertel</u> , Ernesto Martín Rodríguez
Parallel Session 06.08 Workshop Date & Time: 03.07.2012 / 16:00 - 17:30 Room: D504 (4th Floor)	
PS.06.08.W	Getting Practical in the Netherlands <u>Henk Pol</u> , Wim Sonneveld

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Parallel Session 06.09 Workshop

Date & Time: 03.07.2012 / 16:00 - 17:30

Room: D505 (4th Floor)

PS.06.09.W

Liquid crystals in school - what can they offer?

Mojca Cepic, Jerneja Pavlin, Maja Pecar, Katarina Susman, Sasa Zihertl

Parallel Session 06.10

Date & Time: 03.07.2012 / 16:00 - 17:30

Room: D506 (4th Floor)

Session Chair: **Mauricio Pietrocola**

PS.06.10.a

Gravity as a Conservative Force: A Survey of Misconceptions

Johanna Mae Indias, Clark Kendrick Go

PS.06.10.b

Development and Administration of Concept Survey on Wave Particle Duality and Uncertainty Principle for Undergraduate Students: A Pilot Study

Sapna Sharma, Pardeep Kumar Ahluwalia

PS.06.10.c

On the teaching of the concept of Time Evolution on Quantum Mechanics

Glauco Cohen Pantoja, Marco Antonio Moreira, Victoria Elnecave Herscovitz

PS.06.10.d

Development of a TLS on the relativity of time and the Twin Paradox: Analysis of its Structural Elements

Mauricio Pietrocola, Ivã Gurgel, Jorge Nicolau, Graciella Watanabe, Armando Tagiku, Itamar Santos, Helio Vicentini, Leandro Oliveira, Fabio Beig, Maria Beatriz Fagundes, Alexandre Bagdonas Henrique

PS.07.01.a

Teachers' Actions in the Collaborative Construction of Arguments

Lucia Helena Sasseron, Anna Maria Pessoa De Carvalho

WG-I.02

Date & Time: 03.07.2012 / 16:00 - 17:30

Room: B CONF (Auditorium-I)

Session Chair: **Ronald K. Thornton**

WG-I.01

Workgroup I: Pedagogical Value of Using Computers to Learn Physics

Ronald K. Thornton

WG-II.02

Date & Time: 03.07.2012 / 16:00 - 17:30

Room: FAZIL SAY (Auditorium II)

Session Chair: **Elena Sassi**

WG-II.01

Workgroup II: Developing the teachers: physics PCK development across a career

Elena Sassi



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Plenary Session 04

Date & Time: 04.07.2012 / 09:00 - 10:00

Room: B CONF (Auditorium-I)

Session Chair: Dean Zollman

PS04

Cross Cultural Investigation of Student Understanding

Pornrat Wattanakasiwich

10:00-10:30

Coffee Break

Parallel Session 07.01

Date & Time: 04.07.2012 / 10:30 - 12:00

Room: D506 (4th Floor)

Session Chair: Gesche Pospiech

PS.07.01.b

New perspective on rotations: experiments, modelling and analogies based on angular momentum as an extensive quantity

Alessandro Ascarì, Federico Corni, Tommaso Corridoni, Michele D'anna, Giovanni Savino

PS.07.01.c

Discourse and Argumentation in an Urban Science Classroom

Patricia S Dunac, Kadir Demir, Jennifer Esposito

PS.07.01.d

Understanding and modelling in physics - the circular motion revisited

Gesche Pospiech, Olaf Uhden, Ricardo Karam, Ulrike Böhm

Parallel Session 07.02

Date & Time: 04.07.2012 / 10:30 - 12:00

Room: D501 (4th Floor)

Session Chair: Konstantin Rogozin

PS.07.02.a

Diagrams: facilitator or obstacle for understanding energy balances? A case study about greenhouse effect

Philippe Colin

PS.07.02.b

An investigation of university students' understanding of graphs in mathematics, physics and other contexts

Maja Planinic, Zeljka Milin Sipus, Ana Susac, Lana Ivanjek

PS.07.02.c

Physics learning instruments of the 21st century

Konstantin Rogozin

PS.07.02.d

Students' difficulties with the concepts of direction and sense of a vector in the Mexican Education System

Pablo Barniol, Genaro Zavala

Parallel Session 07.03

Date & Time: 04.07.2012 / 10:30 - 12:00

Room: D502 (4th Floor)

Session Chair: Anisa Qamar

PS.07.03.a

Fear of radiation: What can be done

Pradip Deb

PS.07.03.b

Science teaching at hospital school: an activity theory approach

Cristiano Rodrigues Mattos, Luciani Bueno Tavares

PS.07.03.c

Context- based physics: case-studies of teacher training and materials for Science education in road safety education

Alessandra Mossenta, Marisa Michelini, Alberto Stefanel, Laura Tamburini

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PS.07.03.d	Energy Solution for the coming Generations! <u>Anisa Qamar</u> , Arshad M. Mirza
Parallel Session 07.04 Date & Time: 04.07.2012 / 10:30 - 12:00 Room: D402 (3rd Floor) Session Chair: Tom Lambert	
PS.07.04.a	Multiple representations about sound propagation of the 8th grade students <u>Jeongwoo Park</u> , Junehee Yoo
PS.07.04.b	Project-based learning outcomes at The Bosepo as the unique students' competition in Sarajevo <u>Merve Kevser Coskun</u> , Zalkida Hadzibegovic
PS.07.04.c	Impact of IBSE methods and IBSE materials on students' learning <u>Zuzana Jeskova</u> , Marian Kires, Claudio Fazio, Eilish Mcloughlin, Ewa Kedzierska
PS.07.04.d	How IBSL (inquiry based science learning) is the IBSL approach? <u>Tom Lambert</u>
Parallel Session 07.05 Date & Time: 04.07.2012 / 10:30 - 12:00 Room: D403 (3rd Floor) Session Chair: Jenaro Guisasola	
PS.07.05.a	Conoscopic figure formation through experiments with anisotropic materials <u>Maja Pecar</u> , Mojca Cepic
PS.07.05.b	Demonstration of the angular dependence of the extraordinary refraction index <u>Jerneja Pavlin</u> , Sasa Zihlerl, Jurij Bajc, Natasa Vaupotic, Ana Gostincar Blagotinsek, Mojca Cepic
PS.07.05.c	Introductory students' difficulties in applying the ray model and the wave model of light in novel context <u>Mikko Kesonen</u> , Mervi A. Asikainen, Pekka E. Hirvonen
PS.07.05.d	Research based teaching sequence on Electromagnetic Induction <u>Jenaro Guisasola</u> , Kristina Zuza, Jose Manuel Almudí
Parallel Session 07.06 Date & Time: 04.07.2012 / 10:30 - 12:00 Room: D404 (3rd Floor) Session Chair: Richard Hechter	
PS.07.06.a	Knowledge differences of experts and future science teachers on basic aspects of radioactivity <u>Jeanne Kriek</u> , Ilsa Basson, Corene Coetzee
PS.07.06.b	Variation in the Representations of Pre-service Physics Teachers in Image Formation and Observation Process <u>Derya Kaltakci</u> , Ali Eryilmaz
PS.07.06.c	Multiple representations in the experimental study of Classical Mechanics <u>Alejandro González Y Hernández</u> , Pilar Segarra Alberú
PS.07.06.d	Physics teaching orientation influences on use of multiple modes of representation: Perspectives of Manitoban preservice teachers <u>Richard Hechter</u>

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Parallel Session 07.07 Workshop

Date & Time: 04.07.2012 / 10:30 - 12:00

Room: Smart Class

PS.07.07.W **Scientix: easy to find high quality science and maths teaching resources**
Carlos Jorge Cunha, Eloise Gérard, Águeda Grás Velázquez

Parallel Session 07.08 Workshop

Date & Time: 04.07.2012 / 10:30 - 12:00

Room: D504 (4th Floor)

PS.07.08.W **Exploring plane mirrors through Lab Stations: a middle school approach**
Ana Rita Lopes Mota, João M. B. Lopes Dos Santos

Parallel Session 07.09 Workshop

Date & Time: 04.07.2012 / 10:30 - 12:00

Room: D505 (4th Floor)

PS.07.09.W **Reformed Teaching Observation (RTOP)**
Kathleen Falconer, Dan Macisaac

Parallel Session 07.10

Date & Time: 04.07.2012 / 10:30 - 12:00

Room: D405 (3rd Floor)

Session Chair: Henk Pol

PS.07.10.a **Foundation Level versus Mainstream Physics: Access for Success?**
Deena Naidoo, Daisy Matlou, Douglas Clerk

PS.07.10.b **Proposal for a teaching and learning sequence on cosmic rays for high school curriculum**
Marcelo Alves Barros, Edson Cesar Marques Filho, Herbert Alexandre João, Cristiano Rodrigo Garbelotti

PS.07.10.c **Postgraduate Researchers' Experiences of Nanoscience and Nanotechnology Research- A Phenomenological Study**
Deepa N Chari, Robert Howard, Brian Bowe

PS.07.10.d **Engineering - Technological Design: students', teachers' and professional designers' ideas about learning goals**
Henk Pol, Kim Krijtenburg Lewerissa

12:00-13:00 **LUNCH BREAK**

Parallel Session 08.01

Date & Time: 04.07.2012 / 13:00 - 14:30

Room: D402 (3rd Floor)

Session Chair: Mojca Cepic

PS.08.01.a **The inverted classroom in a mixed-cohort introductory physics course: a case study**
Ross Kerr Galloway, Simon Peter Bates

PS.08.01.b **Exploring In-Service Science Teachers' Implementation of Interdisciplinary Teaching: A Case Study**
Funda Eraslan, Eralp Bahçivan

PS.08.01.c **Understanding rainbow at the pre-university level**
Jurij Bajc, Barbara Rovšek

PS.08.01.d **Knitting patterns and the concept of anisotropy**
Mojca Cepic

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Parallel Session 08.02

Date & Time: 04.07.2012 / 13:00 - 14:30

Room: D403 (3rd Floor)

Session Chair: Vera Koudelkova

PS.08.02.a	Investigating students understanding on the concepts of electromotive force and its differentiation from potential difference in electromagnetism <u>Isabel Garzon</u> , Jenaro Guisasola, Mieke De Cook, Kristina Zuza, Paul Van Kampen
PS.08.02.b	How Do The Use of Gowin's V and ICTS Effect Student Learning in The Construction of Free Body Diagrams? <u>Gabriel Castro Ronquillo</u> , Alexander Ortega Medina
PS.08.02.c	Educational use of data from the CMS experiment at the LHC <u>Thomas McCauley</u>
PS.08.02.d	How high school's students understand Electricity and Magnetism? <u>Vera Koudelkova</u> , Leos Dvorak, Zdenek Sabatka
PS.08.02.e	Tablet based interactive GPS textbook – a new kind of an educational means <u>Jan Obdržálek</u> , Jirí Kofránek, Miroslav Svitek

Parallel Session 08.03

Date & Time: 04.07.2012 / 13:00 - 14:30

Room: D404 (3rd Floor)

Session Chair: Salim Siddiqui

PS.08.03.a	Learning in the physics laboratory as a material discursive practice <u>Jonte Bernhard</u>
PS.08.03.b	A novel approach to encourage students' independent thinking in the physics laboratory <u>Rajesh Bhaskar Khaparde</u>
PS.08.03.c	Beyond recipe-based practical exercises: towards a better future? <u>Douglas Clerk</u> , Deena Naidoo
PS.08.03.d	Enhancing student learning by modifying first-year university physics laboratory experiments through peer review <u>Salim Siddiqui</u> , Daniel Southam, Jo Ward, Marjan Zadnik

Parallel Session 08.04

Date & Time: 04.07.2012 / 13:00 - 14:30

Room: D405 (3rd Floor)

Session Chair: Gordon P Ramsey

PS.08.04.a	Students' strategies in solving physics problems – questionnaire research <u>Marie Snetinova</u> , Zdenka Koupilova, Jaroslav Reichl
PS.08.04.b	The Establish project and an assessment of its impact on students <u>Martina Kekule</u> , Vojtech Zak
PS.08.04.c	From physics textbooks to Physics teaching packages: New experience in teaching physics in Iranian school <u>Rouhollah Khalili Boroujeni</u>
PS.08.04.d	Physics Pedagogy and Assessment in Secondary Schools in the United States <u>Gordon P Ramsey</u> , Melissa M Nemeth, David Haberkorn

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Parallel Session 08.05

Date & Time: 04.07.2012 / 13:00 - 14:30

Room: D501 (4th Floor)

Session Chair: Zalkida Hadzibegovic

PS.08.05.a	Friends, footholds, and fear: impacts on physics learning (Part 1) <u>Saalih Allie</u> , Dedra Demaree
PS.08.05.b	Friends, footholds, and fear: impacts on physics learning (Part 2) Saalih Allie, <u>Dedra Demaree</u> , Sissi Li, Victoria Nwosu, Philip Southey, Julian Taylor
PS.08.05.c	Gender differences in conceptual understanding of Newtonian mechanics: a comparison of UK and US students <u>Marion Birch</u> , Niels Walet
PS.08.05.d	Changing students' alternative conceptions in physics: an example of active learning of geometrical optics at university level <u>Zalkida Hadzibegovic</u> , Josip Slisko

Parallel Session 08.06

Date & Time: 04.07.2012 / 13:00 - 14:30

Room: D502 (4th Floor)

Session Chair: Federico Corni

PS.08.06.a	Helping Primary Teacher Students to overcome their Lack of Motivation Teaching Science <u>Ulrike Böhm</u> , Susanne Narciss, Gesche Pospiech, Hermann Körndle
PS.08.06.b	Guided-Inquiry in Teaching Physics <u>Nouredine Zettli</u>
PS.08.06.c	Teaching future Physics teachers how to teach Physics in schools: perceptions on consequences of In-school Stage and orientations for Probation Year Marta Vasconcelos Sá, <u>Maria José B. M. De Almeida</u>
PS.08.06.d	Primary school teachers: Becoming aware of the relevance of their own scientific knowledge <u>Federico Corni</u> , Hans U. Fuchs, Enrico Giliberti, Cristina Mariani

Parallel Session 08.07 Workshop

Date & Time: 04.07.2012 / 13:00 - 14:30

Room: D504 (4th Floor)

PS.08.07.W	School bag physics laboratory <u>Vijaykumar C Verenkar</u>
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Parallel Session 08.08 Workshop

Date & Time: 04.07.2012 / 13:00 - 14:30

Room: Smart Class

PS.08.08.W	Experiencing data analysis from the world's largest science experiment <u>Konrad Jende</u>
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Parallel Session 08.09 Workshop

Date & Time: 04.07.2012 / 13:00 - 14:30

Room: D406 (3rd Floor)

PS.08.09.W	Simple and Beautiful Experiments V by LADY CATS and Science teachers groups <u>Haruka Onishi</u> , Masako Tanemura, Kyoko Ishii, Fumiko Okiharu, Masaaki Taniguchi, Junichiro Yasuda, Mika Yokoe, Hiroshi Kawakatsu
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Parallel Session 08.10

Date & Time: 04.07.2012 / 13:00 - 14:30

Room: D506 (4th Floor)

Session Chair: Homeyra R Sadaghiani

PS.08.10.a	Teacher Training Program with Interactive Lecture and Experiments using Physics by Inquiry <u>Kyoko Ishii</u> , Yoshihide Yamada
PS.08.10.b	How Science Teachers' Utilization of Computers Change through a Targeted Professional Development Program <u>Nagihan Imer Çetin</u> , Betül Timur, Mehmet Fatih Taşar
PS.08.10.c	In-service teacher training for using of IT in inquiry based activities <u>Marian Kires</u> , Zuzana Jeskova
PS.08.10.d	Connecting use of technology to academic achievement <u>Homeyra R Sadaghiani</u>

Parallel Session 08.11

Date & Time: 04.07.2012 / 13:00 - 14:30

Room: D505 (4th Floor)

Session Chair: Robert Lambourne

PS.08.11.a	The Learning approach on Percolation under Quantum Hall Effect conditions at the post graduation Level <u>Valeriy E Arkhincheev</u> , Syed Naseem Hussain Shah
PS.08.11.b	The de Broglie wavelength and frequency of the scattered electrons in Compton effect <u>Vinay Venuogopal</u> , Piyush S Bhagdikar
PS.08.11.c	Understanding wavefunction properties: a case study on 3rd year Italian physics students Marisa Michelini, Alberto Stefanel, <u>Giacomo Zuccarini</u>
PS.08.11.d	The pedagogical challenge of quantum field theory <u>Robert Lambourne</u>

14:30-14:40

SHORT BREAK

14:40-16:30

Conference Excursion*



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Plenary Session 05

Date & Time: 05.07.2012 / 09:00 - 10:00

Room: B CONF (Auditorium-I)

Session Chair: Ton Ellermeijer

PS05	A Lifetime Search for PCK and Physics Representations across Contexts and Cultures <u>Ed Van Den Berg</u>
10:00-10:30	Coffee Break

Parallel Session 09.01

Date & Time: 05.07.2012 / 10:30 - 12:00

Room: D401 (3rd Floor)

Session Chair: Ian Lawrence

PS.09.01.a	Learning progression and core physics ideas in astronomy <u>Sabrina Rossi</u> , Enrica Giordano, Nicoletta Lanciano
PS.09.01.b	Praxeological Organization of School Knowledge: A comparison of the Clapeyron equation approach in both physics and chemistry textbooks <u>Fabiana Botelho Kneubil</u> , Danilo Claro Zanardi, Vanessa Sanches Pereira
PS.09.01.c	The importance of learning styles in teaching thermodynamics <u>Pilar Segarra</u> , Maria De Los Angeles Ortiz, Ingrid Escobedo, Susana Orozco, Virgen Huerta
PS.09.01.d	The practical essence of the Supporting Physics Teaching Initiative (SPT) <u>Ian Lawrence</u>

Parallel Session 09.02

Date & Time: 05.07.2012 / 10:30 - 12:00

Room: D402 (3rd Floor)

Session Chair: Aikaterini Konstantinidou

PS.09.02.a	The misconception - concept transition <u>Clemens Wagner</u>
PS.09.02.b	Naive Conceptions in Terms of Affordance Theory <u>Hideo Nitta</u>
PS.09.02.c	Using self-generated analogies in teaching of thermodynamics <u>Jesper Haglund</u> , Fredrik Jeppsson
PS.09.02.d	High School Students' reasoning in thermal conductivity. A comparative study between Catalonia and Greece <u>Aikaterini Konstantinidou</u> , Marina Castells, George N Vlahakis

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Parallel Session 09.03

Date & Time: 05.07.2012 / 10:30 - 12:00

Room: D403 (3rd Floor)

Session Chair: Umesh Dewnarain Ramnarain

PS.09.03.a	Improving student learning in physics laboratories through the professional development of laboratory demonstrators <u>Marjan Zadnik</u> , Mauro Mocerino, Daniel Southam, Shelley Yeo
PS.09.03.b	Determining Physics Teachers' Misconceptions about Basic Astronomy Concepts with a Three-tier Test <u>Uygar Kanli</u>
PS.09.03.c	Recent professional development programs for practicing physics teachers in Armenia: Are they in line with international trends? <u>Julietta Mirzoyan</u>
PS.09.03.d	Mentoring as a form of professional support for South African physics teachers <u>Umesh Dewnarain Ramnarain</u> , Sam Ramaila

Parallel Session 09.04

Date & Time: 05.07.2012 / 10:30 - 12:00

Room: D404 (3rd Floor)

Session Chair: Zdenek Sabatka

PS.09.04.a	An integrated approach to the teaching and learning of physics and mathematics utilising technology <u>Jennifer Johnston</u> , Miriam Liston, Niamh O'meara, Joanne Broggy, John O'donoghue, George McClelland
PS.09.04.b	Interactive Multimedia related to real life, A Model to teach Physics in high school <u>Azita Seyed Fadaei</u> , Sara Daraei Hajitooei, César Eduardo Mora Ley
PS.09.04.c	AccessNano: a unique secondary school resource making nanotechnology accessible to young Australians <u>Francesca Fiore Calati</u> , Kristin Alford, Amanda Clarke
PS.09.04.d	Interactive Physics Laboratory and Collection of Demonstration Experiments <u>Zdenek Sabatka</u> , Zdenek Drozd, Leos Dvorak, Vera Koudelkova

Parallel Session 09.05

Date & Time: 05.07.2012 / 10:30 - 12:00

Room: D405 (3rd Floor)

Session Chair: Olga Gioka

PS.09.05.a	Promoting active learning in experimental physics courses of the Engineering career using the Moodle platform <u>Cecilia Stari</u> , Lorenzo Lenci
PS.09.05.b	Open Inquiry investigations on heat transfer performed by undergraduate engineering students <u>Nicola Pizzolato</u> , Claudio Fazio, Rosa Maria Sperandeo Mineo, Dominique Persano Adorno
PS.09.05.c	Física 1++: An experience with Cooperative Learning in the first physics course at the Faculty of Engineering <u>Adriana Auyuanet</u> , Federico Davoine, Cecilia Stari
PS.09.05.d	Linking different domains of physics through the mathematical tool of integrals <u>Olga Gioka</u>

Parallel Session 09.06

Date & Time: 05.07.2012 / 10:30 - 12:00

Room: FAZIL SAY (Auditorium II)

Session Chair: Sarojiny Saddul Hauzaree

PS.09.06.a	European Benchmarks for Physics Teaching Degrees <u>Urbaan M. Titulaer</u>
PS.09.06.b	Effects of Modeling on Argumentative Discourse <u>Deniz Eren Belek</u> , Feral Ogan Bekiroglu
PS.09.06.c	Lesson Practices by Pre-service Teachers in the Distinguished Science Teacher Project <u>Fumiko Okiharu</u> , Akizo Kobayashi
PS.09.06.d	Linking the in-service teacher education programme to the practical work of upper secondary physics students <u>Sarojiny Saddul Hauzaree</u>

Parallel Session 09.07

Date & Time: 05.07.2012 / 10:30 - 12:00

Room: D501 (4th Floor)

Session Chair: Paul DAlessandris

PS.09.07.a	Basic Principles to Understand Measurement Uncertainties in Classrooms <u>Julia Hellwig</u> , Burkhard Priemer
PS.09.07.b	A View of Integrated Non-Chronological Physics: From the micro to the macro, from the macro to the micro - linking the dimensions <u>Roberto Soares Da Cruz</u> , <u>Roberto Soares Da Cruz</u> , Cristiano Mattos, Leonardo Lago
PS.09.07.c	Reconsidering some aspects of Inquiry Based Science Education: a case study on Model Based Inquiry <u>Claudio Fazio</u> , Onofrio Rosario Battaglia, Rosa Maria Sperandeo Mineo
PS.09.07.d	Spiral Physics Active-Learning Workbooks <u>Paul DAlessandris</u>

Parallel Session 09.08 Workshop

Date & Time: 05.07.2012 / 10:30 - 12:00

Room: D502 (4th Floor)

PS.09.08.W	Modellus: A tool for interactive mathematical modelling <u>Rui Gomes Neves</u> , Vítor Duarte Teodoro
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Parallel Session 09.09 Workshop

Date & Time: 05.07.2012 / 10:30 - 12:00

Room: D504 (4th Floor)

PS.09.09.W	Materials from the Contemporary Physics Education Project that can be used to enhance physics classes <u>Gordon J. Aubrecht, II</u>
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Parallel Session 09.10 Workshop

Date & Time: 05.07.2012 / 10:30 - 12:00

Room: D505 (4th Floor)

PS.09.10.W	MUSE workshop Session 1 Colour phenomena: the role of absorption <u>Laurence Viennot</u> , Elena Sassi
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Parallel Session 09.11

Date & Time: 05.07.2012 / 10:30 - 12:00

Room: D506 (4th Floor)

Session Chair: Corrado Enrico Agnes

PS.09.11.a	Mathematical challenges to secondary school students and teachers in a guided reinvention, context-based teaching-learning strategy towards the concept of energy conservation <u>Paul Logman</u> , Wolter Kaper, Ton Ellermeijer
PS.09.11.b	Teaching energy sources and energy production possibilities at school system in Hungary <u>Ervin Racz</u>
PS.09.11.c	Student interpretations of visual and spatial information and the impact of learning physics and space science <u>Ramon E Lopez</u>
PS.09.11.d	Revisiting the definition of energy <u>Corrado Enrico Agnes</u>
12:00-13:00	LUNCH BREAK

Poster Session - 2.01

Date & Time: 05.07.2012 / 13:00 - 14:00

Room: D406 (3rd Floor)

P2.G01.01	Explaining by panes (XBP): how the Supporting Physics Teaching Initiative uses a graphical language to communicate physics multi-modally with multi-media <u>Ian Lawrence</u>
P2.G01.02	Physics Teaching with Multi-Touching Tablets <u>Fu Kwun Hwang</u>
P2.G01.03	Scientix: the new internet-based community for science education in europe <u>Carlos Jorge Cunha</u> , Eloise Gérard, Àgueda Grás Velázquez
P2.G01.04	Generic test and item analysis for digital assessments <u>Frank F. Schweickert</u>
P2.G01.05x	Multimedia simulations in teaching and learning Physics <u>Meloua Nordine</u> , Belaidi Abdelkader
P2.G01.06	From teachers' eyes: physics subjects that are difficult to teach and learn <u>Betül Timur</u> , Mehmet Fatih Taşar

Poster Session - 2.02

Date & Time: 05.07.2012 / 13:00 - 14:00

Room: D406 (3rd Floor)

P2.G02.01	Developing a diagnostic instrument to investigate undergraduate students' misconceptions of primary nanoscale science <u>Jun Yi Chen</u>
P2.G02.02	Hands-on supporting students in understanding the process of vision <u>Claudia Haagen</u> , Benjamin Wallner
P2.G02.03	Improving scientific knowledge and laboratory skills of secondary school students: the Italian Plan "Scientific Degrees" <u>Elena Sassi</u> , Gianni Chieffari, Sara Lombardi, Italo Testa

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P2.G02.04	Beyond simplistic conceptual change: Learning electric circuit theory as the "learning of a complex concept" <u>Jonte Bernhard</u> , Anna Karin Carstensen, Margarita Holmberg (née González Sampayo)
P2.G02.05	A qualitative investigation of high school students' misconceptions and learning difficulties of free fall motion <u>Maryam Saberi</u> , Mansour Vesali
P2.G02.06x	Conducting the Force Concept Inventory (FCI) in high school level in Iran for the first time <u>Farahnaz Kiani</u> , Masoomeh Ghasemi, Masoomeh Ghasemi
P2.G02.07	A didactic proposal for wave optics learning Silvia Del Valle Bravo, <u>Marta Azucena Pesa</u>
P2.G02.08	Secondary School Students' Explanations on Anomalous Data in Real Experiments and Computer Simulations <u>Tobias Ludwig</u> , Burkhard Priemer
Poster Session - 2.03 Date & Time: 05.07.2012 / 13:00 - 14:00 Room: D406 (3rd Floor)	
P2.G03.01	Connecting Coach equipment to Easy Java Simulations models <u>Francisco Esquembre</u> , Andres Mejias, Marco Antonio Marquez
P2.G03.02	Air Table: Designing a Laboratory Set for CAL <u>John Şefik Roach</u> , Yasemin Eren
P2.G03.03x	Science education vehicle <u>Vijaykumar C Verenkar</u>
P2.G03.04	Students exploring the laws of radioactivity and the math of randomness with a real remote experiment <u>Pavel Brom</u> , Frantisek Lustig, Jiri Dvorak
P2.G03.05	Visualizing the Profile of Waves: New Experiments with the Ripple Tank <u>Fabrizio Logiurato</u> , Luigi Gratton
P2.G03.06	An alternative approach to viscometry in laboratory exercises and research <u>Hana Divisova</u> , David Schmoranzner, Milos Rotter, Vojtech Zak
Poster Session - 2.04 Date & Time: 05.07.2012 / 13:00 - 14:00 Room: D406 (3rd Floor)	
P2.G04.01	Electric circuits in The Heureka Project – multiple representations <u>Irena Dvorakova</u>
P2.G04.02	Learning colour phenomena: the effects of a teaching strategy designed to favor a change in the way of learning Bettina Mariel Bravo, <u>Marta Azucena Pesa</u> , Juan Ignacio Pozo
P2.G04.03	Learn Physic in secondary School, through Gesture <u>Giri Cahyono Mariadi</u>
P2.G04.04	Students of the 21st century learning science: The use of movies to teach Physics <u>Márcio Nasser Medina</u> , Anderson Ribeiro
P2.G04.05	Non-destructive methods in material science in attractive way <u>Zuzana Zdrzilova</u> , Kristian Mathis

P2.G04.06	<p>The Italian project IDIFO3 (Innovazione Didattica in Fisica e Orientamento 3) Alberto Stefanel, <u>Marisa Michelini</u>, Aldo Altamore, Mario Bochicchio, Assunta Bonanno, Federico Corni, Anna De Ambrosi, Franco Fabbri, Margherita Fasano, Marco Alessandro Giliberti, Olivia Levrini, Patrizia Magnoler, Rosa Maria Mineo Sperandeo, Giampiero Ottaviani, Stefano Oss, Maria Peressi, Giuseppina Rinaudo, Lorenzo Santi, Rosa Stella</p>
P2.G04.07x	<p>Learning renewable energies in Secondary School Physics: Concepts to achieve a scientific culture <u>Verónica Tricio Gómez</u>, Nelson Arias Avila, Rolando Valdés Castro</p>
<p>Poster Session - 2.05 Date & Time: 05.07.2012 / 13:00 - 14:00 Room: D406 (3rd Floor)</p>	
P2.G05.01	<p>Development of POCoM (Practical On-site Cooperation Model) to improve physics teaching and learning <u>Jongwon Park</u>, Youngmin Kim, Youngshin Park, Jinsu Jeong, Jongseok Park</p>
P2.G05.03	<p>Improving Physics Teaching Through Technology <u>Nouredine Zettili</u></p>
P2.G05.04	<p>Investigating the relation between students' reasoning and the pedagogy in university science content courses for future grade 1-6 teachers <u>Dean A Zollman</u>, Mojgan Matloob Haghanikar</p>
P2.G05.05	<p>Professional development of teachers in research based co-planning of intervention modules in physics <u>Alberto Stefanel</u>, Giuseppe Fera, Marisa Michelini, Emanuele Pugliese, Alessandra Mossenta, Lorenzo Santi, Challapalli Sri, <u>Alberto Stefanel</u>, Stefano Vercellati</p>
P2.G05.06	<p>Promoting Physics Understanding through the use of Creative and Teacher-Led Continuous Professional Development (CPD) <u>Joanne Broggy</u>, Jennifer Johnston</p>
P2.G05.07	<p>LAPEN Training Physics Teachers Program <u>Cesar Mora</u>, Daniel Sánchez Guzmán, Rubén Sánchez, Enrique Arribas</p>
<p>Poster Session - 2.06 Date & Time: 05.07.2012 / 13:00 - 14:00 Room: D406 (3rd Floor)</p>	
P2.G06.01x	<p>Differences between social science teachers and physics teachers about beliefs of competences model in Mexico <u>Mario Humberto Ramírez Díaz</u>, Guadalupe Angel González Chávez</p>
P2.G06.02	<p>Scientific modeling seen as a conceptual field: theoretical approach and preliminary empirical evidences of possible operational invariants on the learning of physics Rafael Vasques Brandão, Ives Solano Araujo, <u>Eliane Angela Veit</u></p>
P2.G06.03	<p>Computational modeling with AVM diagram and its contribution for a meaningful learning of physics concepts and the development of a critical view of science Sonia López Ríos, Eliane Angela Veit, <u>Ives Solano Araujo</u></p>
P2.G06.04x	<p>Transformation model of information into knowledge when solving problems in the real context. Case study of teaching knowledge of the direct current in Vietnam <u>Do Huong Tra</u></p>
P2.G06.05	<p>Promoting Physics Student Reflection via Reading Logs and Learning Commentaries <u>Kathleen Falconer</u>, Dan Macisaac, David Abbott</p>

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P2.G06.06	"There's no such thing as a stupid question": what prevents graduate students from speaking up at morning coffee, journal club, and colloquium? <u>Audra Baleisis</u>
P2.G06.07x	Validation of an instrument to measure the students motivation in physics classes <u>José Francisco Custódio</u> , Luiz Clement, Sueli Édi Rufini
P2.G06.08	First steps into physics in the winery Roberto Benedetti, Emilio Mariotti, <u>Vera Montalbano</u>
Poster Session - 2.07	
Date & Time: 05.07.2012 / 13:00 - 14:00	
Room: D406 (3rd Floor)	
P2.G07.01	A study of parental involvement in their children's physics learning in Taiwan <u>Yi Ting Cheng</u> , Huey Por Chang, Wen Yu Chang
P2.G07.02	Implementing STEAM Instruction for talented/gifted student on light <u>Hyun Sook Choi</u> , Jung Bok Kim
P2.G07.03	An empirical study on a learning path on wave physics focused on energy <u>Vera Montalbano</u> , Simone Di Renzone
P2.G07.04	Ten reasons to give credence to anthropogenic climate change <u>Gordon J. Aubrecht, II</u>
P2.G07.05	Light as a substance <u>Corrado Enrico Agnes</u>
P2.G07.06	The role of experiment in the learning physics process <u>Alicja Wojtyna Jodko</u>
Poster Session - 2.08	
Date & Time: 05.07.2012 / 13:00 - 14:00	
Room: D406 (3rd Floor)	
P2.G08.01x	Children in the Fascinating World of Physics Stefania Widuch, <u>Jerzy Jarosz</u> , Aneta Szczygielska
P2.G08.02	Close cooperation of Primary, Secondary and University professors to teach distance forces concept in primary school <u>Cecilia Stari</u> , Federico Davoine, Mariana Vilaró, Gabriela Pérez, Alejandra Buffa
P2.G08.03	Don't be afraid of Physics – Interactive activities from Physics for basic-school pupils <u>Ludmila Onderova</u> , Zuzana Jeskova, Marian Kires
P2.G08.04	Wow, it works! Introducing electricity to children <u>Katarina Susman</u> , David Rihtarsic, Ana Gostincar Blagotinsek, Mojca Cepic
P2.G08.05x	Practical Activities in Astronomy for Primary School Teachers Education <u>Lucília Maria Pessoa Tavares Dos Santos</u> , Cristina Maria Sá
P2.G08.06	Web-based Resource to Support Responsive Teaching and Scientific Inquiry in Elementary School <u>Fred Goldberg</u> , Sharon Bendall, Michael Mckean, David Hammer
P2.G08.07	Using action research to improve teaching of electricity for primary science physics Soleh Mohd Noor, <u>Siti Hendon Sheikh Abdullah</u>
14:00-14:10	SHORT BREAK

Parallel Session 10.01

Date & Time: 05.07.2012 / 14:10 - 15:40

Room: D402 (3rd Floor)

Session Chair: Masood Sadrolashrafi

PS.10.01.a	Less Teacher Talk, More Student Talk - Dialogic Inquiry on Newton's Second Law <u>Margareta Enghag</u> , Jan Andersson
PS.10.01.b	Expanding students' schemas about motion by using photographs <u>Noushin Nouri</u> , Mansour Vesali
PS.10.01.c	An Investigation of Correlations between Concepts in Newtonian Physics and Conceptual Diagrams in FCI <u>Minoru Sato</u>
PS.10.01.d	The effects of teaching electro-magnetic induction by inquiry methods on students' process skills and learning Fatemeh Ahmadi, <u>Masood Sadrolashrafi</u>

Parallel Session 10.02

Date & Time: 05.07.2012 / 14:10 - 15:40

Room: D403 (3rd Floor)

Session Chair: Feral Ogan Bekiroglu

PS.10.02.a	What do students recall from the inquiry-based teaching? <u>Marta Maximo Pereira</u>
PS.10.02.b	The Nature Of Thought Experiments Used By Students In Different Levels During Problem Solving In Physics <u>Şule Dönertaş Kösem</u> , Ömer Faruk Özdemir
PS.10.02.c	Influence of different learning activities on transfer of knowledge in explanatory model construction <u>Mihael Gojkošek</u> , Gorazd Planinsic, Josip Slisko
PS.10.02.d	Learning physics with the use of the forum and Cooperative Learning <u>Calros Alberto Martinez</u> , Alexander Ortega

Parallel Session 10.03

Date & Time: 05.07.2012 / 14:10 - 15:40

Room: D404 (3rd Floor)

Session Chair: Lucia Sasseron

PS.10.03.a	CERN Portuguese Language Teachers Programme: an 'inter-national' venture in teacher professional development <u>Pedro Abreu</u> , Gaspar Barreira, Nilson Garcia, Ronald Shellard, Mick Storr
PS.10.03.b	In-Service Teachers' Training Creative Physics Workshops at the National Polytechnic Institute in Mexico. A First Step <u>Abraham Salinas Castellanos</u> , Alexander Kazachkov
PS.10.03.c	Introduction of astronomy from kindergarten to upper secondary education: a holistic approach <u>Emmanouil Apostolakis</u> , Sofoklis Sotiriou, Vagelis Tsamis, Eleftheria Tsourlidaki
PS.10.03.d	Teachers Facing Curricular Innovation Manifest Elements of Teaching Knowledge Leonardo Cunha, <u>Lucia Sasseron</u>

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Parallel Session 10.04

Date & Time: 05.07.2012 / 14:10 - 15:40

Room: D405 (3rd Floor)

Session Chair: Junehee Yoo

PS.10.04.a	Contributions from the analysis of students' learning pathways to the refinement of the design principles of a teaching-learning sequence with a model-based inquiry approach on the Acoustic Properties of Materials <u>María Isabel Hernández</u> , Digna Couso, Roser Pintó
PS.10.04.b	Identifying student difficulties with atomic spectra <u>Lana Ivanjek</u> , Lillian Mcdermott, Peter Shaffer, Maja Planinic
PS.10.04.c	"What Do My Students Know about Electricity and Magnetism?" - Examining the Preconceptions in Electricity and Magnetism of Pre-University Students in Singapore <u>Yen Ling Lam</u> , Elaine Chapman, Irene Lay Koon Lee
PS.10.04.d	The 9th graders' co-construct of representations about magnetic field of a current <u>Junehee Yoo</u> , Sung Eun Lee, Eun Hee Lim

Parallel Session 10.05

Date & Time: 05.07.2012 / 14:10 - 15:40

Room: D501 (4th Floor)

Session Chair: Friedrich Herrmann

PS.10.05.a	School outreach program for teaching optics: let's start with holography <u>Fabrizio Favale</u> , Maria Bondani
PS.10.05.b	Measuring The Impact of Values and Identity on University Physics Learning <u>Margaret Wegener</u> , Serene Choi
PS.10.05.c	Science teachers relation with social structures: an analysis of discursive interactions in focus groups based on Pierre Bourdieu sociology of education <u>Nathan Carvalho Pinheiro</u>
PS.10.05.d	Newton meets momentum currents – a passion play <u>Friedrich Herrmann</u> , Michael Pohlig, Corrado Agnes, Duygu Yilmaz, Jale Ercan

Parallel Session 10.06

Date & Time: 05.07.2012 / 14:10 - 15:40

Room: D502 (4th Floor)

Session Chair: Mehmet Aydeniz

PS.10.06.a	Klafki's Didaktik Analysis of Specific Physics Content <u>Mohd Zaki Ishak</u>
PS.10.06.b	Self-Criticism of Pre-Service Physics Teachers on Their CBL Usage according to Their Technological Skill Levels <u>Hanife Kökcü</u> , Feral Ogan Bekiroglu, Fatma Caner
PS.10.06.c	Introducing the multi-touching tablet to pre-service physics teachers <u>Fu Kwun Hwang</u> , Ying Shao Shu
PS.10.06.d	Measuring Pre-Service Physics Teachers' Pedagogical Content Knowledge of Momentum <u>Mehmet Aydeniz</u> , Zubeyde Demet Kirbulut

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Parallel Session 10.07

Date & Time: 05.07.2012 / 14:10 - 15:40

Room: D504 (4th Floor)

Session Chair: Fred Goldberg

PS.10.07.a	Educational Neuroscience and Physics Teaching and Learning <u>Ana Susac</u> , Maja Planinic, Lana Ivanjek
PS.10.07.b	Secondary School Physics Teachers' Views about the Alignment of the New Physics Curriculum with Instruction and Assessment in Turkey <u>Fatih Çağlayan Mercan</u>
PS.10.07.c	Efforts to Improve an Undergraduate Program and Curriculum <u>Mina Katramatou</u>
PS.10.07.d	Engaging Large Enrollment Classes for Pre-Service Elementary Teachers in the Practices of Science <u>Fred Goldberg</u> , Edward Price, Heath Kirkwood, Scott Patterson, Paul Heft

Parallel Session 10.08 Workshop

Date & Time: 05.07.2012 / 14:10 - 15:40

Room: Smart Class

PS.10.08.W	Modelling and Data-Logging in Teaching Physics - ICTforIST Project <u>Hildegard Urban Woldron</u> , Elzbieta Kawecka, Ewa Kedzierska
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Parallel Session 10.09 Workshop

Date & Time: 05.07.2012 / 14:10 - 15:40

Room: D505 (4th Floor)

PS.10.09.W	MUSE workshop Session 2 Experiments with scanner: relative linear motion <u>Gorazd Planinsic</u> , Laurence Viennot, Elena Sassi
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Parallel Session 10.10 Workshop

Date & Time: 05.07.2012 / 14:10 - 15:40

Room: D506 (4th Floor)

PS.10.10.W	Make your own context based tests <u>Anneke Thurlings</u> , Pieter Smeets
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15:40-16:10 **Coffee Break**

WG-I.03

Date & Time: 05.07.2012 / 16:00 - 17:30

Room: D404 (3rd Floor)

Session Chair: Ronald K. Thornton

WG-I.01	Workgroup I: Pedagogical Value of Using Computers to Learn Physics <u>Ronald K. Thornton</u>
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WG-II.03

Date & Time: 05.07.2012 / 16:00 - 17:30

Room: D405 (3rd Floor)

Session Chair: Elena Sassi

WG-II.01	Workgroup II: Developing the teachers: physics PCK development across a career <u>Elena Sassi</u>
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16:00-17:00 **GIREP Assembly Meeting**

19:00-23:30 **Conference Dinner***

* Not included in the conference registration fee and requires registration.



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FRIDAY

JULY 6, 2012 / FRIDAY

Parallel Session 11.01 Date & Time: 06.07.2012 / 09:00 - 10:30 Room: D501 (4th Floor) Session Chair: Priscilla W Laws	
PS.11.01.a	Developments of Active-Learning on Blowgun Systems Using ICT Tools with Milliseconds Resolution for Better Conceptual Understanding on Mechanics <u>Akizo Kobayashi</u> , Fumiko Okiharu
PS.11.01.b	Teaching physics through online forum discussions <u>Anne L Scarinci</u>
PS.11.01.c	Using Smartpen technology in an active learning lecture setting to observe and characterise student discussions <u>Marsali Beth Wallace</u> , Ross Kerr Galloway
PS.11.01.d	Uses of Video Analysis for Teaching Introductory Physics and an Exploration of its Effectiveness in Helping Students Understand Projectile Motion <u>Priscilla W Laws</u> , Robert B Teese, Patrick J Cooney, Maxine C Willis
Parallel Session 11.04 Date & Time: 06.07.2012 / 09:00 - 10:30 Room: D505 (4th Floor) Session Chair: Francisco Esquembre	
PS.11.02.a	High school students analyzing the phenomenology of superconductivity and constructing model of the Meissner effect <u>Alberto Stefanel</u> , Marisa Michelini, Lorenzo Santi
PS.11.02.b	Superconductivity at high school: minimal requirements and implications for teaching/learning electromagnetism <u>Sara Roberta Barbieri</u> , Marco Giliberti, Claudio Fazio
PS.11.02.c	MPTL Evaluation Report of Multimedia Resources on Electromagnetism <u>Francisco Esquembre</u> , Leopold Mathelitsch, Bruce Mason, Ewa Debowska
Parallel Session 11.03 Date & Time: 06.07.2012 / 09:00 - 10:30 Room: D504 (4th Floor) Session Chair: Hayati Seker	
PS.11.03.a	Understanding the Nature of Science and Nonscientific Modes of Thinking in Gateway Science Courses Calvin Kalman, Marina Milner Bolotin, Mark W. Aulls, Elizabeth S. Charles, <u>Gul Unal Coban</u> , Tetyana Antimirova, Juss Kaur Magon, Xiang Huang, Ahmed Ibrahim, Gyoungho Lee, Xihui Wang
PS.11.03.b	The importance of Chi's ontology tree and conceptual metaphors in physics education <u>Havva Sibel Kurt</u> , Musa Sari
PS.11.03.c	Planet Definition and the Nature of Science <u>Cristina Leite</u> , Vanessa Nobrega Albuquerque
PS.11.03.d	The nature of physics <u>Hayati Seker</u> , Burcu Gulay Guney
Parallel Session 11.02 Date & Time: 06.07.2012 / 09:00 - 10:30 Room: D502 (4th Floor) Session Chair: Marika Kapanadze	
PS.11.04.a	STEM Education international: the ESTABLISH project <u>Stephan Domschke</u> , Martin Lindner

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PS.11.04.b	<p>“STELLA - School for Training in Experiments with Lasers and Laser Applications”: a novel approach to high-level education <u>Maria Bondani</u>, Ottavia Jedrkiewicz, Fabio Ferri, Paolo Di Trapani</p>
PS.11.04.c	<p>A Study of Current and Desired State of Physics Education in Iranian Female Secondary Schools <u>Asghar Soltani Kafrani</u>, Kazem Kazemi, Hosein Moein Abadi, Jamshid Roosta</p>
PS.11.04.d	<p>Innovating Science Teacher Education by the TEMPUS-Project SALiS <u>Marika Kapanadze</u>, Ingo Eilks</p>
<p>Parallel Session 11.05 Date & Time: 06.07.2012 / 09:00 - 10:30 Room: D506 (4th Floor) Session Chair: Claudia Haagen</p>	
PS.11.05.a	<p>Testing student understanding of basic concepts in electricity <u>Hildegard Urban Woldron</u></p>
PS.11.05.b	<p>Physicists in the mist: an outsider's view of research learning <u>Serene Hyun-Jin Choj</u>, Timo A. Nieminen</p>
PS.11.05.c	<p>Analysis of right and wrong answers of concept tests by Item Response Curves <u>Genaro Zavala</u></p>
PS.11.05.d	<p>Testing students' conceptual understanding in geometrical optics with a two-tier instrument <u>Claudia Haagen</u>, Martin Hopf</p>
<p>Parallel Session 11.06 Date & Time: 06.07.2012 / 09:00 - 10:30 Room: D404 (3rd Floor) Session Chair: Cesar Mora</p>	
PS.11.06.a	<p>Active learning electromagnetism with iPhone, iPod Touch and iPad: a new teaching resource <u>Enrique Arribas</u>, Alberto Najera, Augusto Belendez, Jorge Frances, Cesar Mora, María Teresa Franco, Gonzalo Moratalla</p>
PS.11.06.b	<p>Problems and prospects of Physics Education in Bangladesh <u>Shamima K Choudhury</u></p>
PS.11.06.c	<p>University Physics Education using Facebook <u>Enrique Arribas</u>, Alberto Najera, Augusto Belendez, Jorge Frances, Cesar Mora, Maria Teresa Franco</p>
PS.11.06.d	<p>Measurement Engineering Student's Retention of Basic Concepts in Electricity And Magnetism <u>José Orlando Organista</u>, Paco Hernando Talero, Luis Hernando Barbosa, César Eduardo Mora</p>
10:30-11:00	COFFEE BREAK
11:00-12:00	Plenary Session
12:00-12:30	Closing Ceremony
12:30-13:00	LUNCH



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