



# GIREP Newsletter

Editor: Claudia Haagen – University of Vienna, Austrian Educational Competence Centre

## In this Issue

- 1 New GIREP Committee
- 2 GIREP-EPEC 2011 Physics Education Conference in Jyväskylä
- 3 GIREP Membership renewal & fees
- 4 What's going on? – Newsflashes from countries

## EDITOR'S SECTION

Dear Colleagues,

After a longer break, the GIREP newsletter is back again! We plan to have three newsletter issues per year. The electronic newsletter is a service to the members of GIREP and it will be published in the member section of the GIREP homepage. We will announce the publishing of a new newsletter through e-mail. The GIREP committee invites you to contribute to the E-Newsletter (upcoming events, announcements, news from your countries, etc.). The deadline for messages to be included in the next issue of this newsletter is January 31, 2012.

Editor of GIREP Newsletter, Claudia Haagen

## New GIREP Committee: Introduction of members

### PRESIDENT: Ton Ellermeijer



Ton is a regular participant of GIREP since 1984, joined the Committee in 2002, and serves as President since 2006. In 2006 he was the main organizer of the GIREP Conference in Amsterdam.

Ton has a short background as high school teacher (Physics and Mathematics), and a PhD in Physics Education. He has a long career in Physics Education, as a Coordinator of large curriculum innovation projects in The Netherlands, as researcher and teacher trainer. Since beginning of 1980s a main topic has been the use of ICT in Science Education, resulting f.i. in the learning environment Coach. He has been acknowledged for his contributions to Physics Education nationally in 1999 (Prof Minnaert Prize), and internationally in 2009 (ICPE Medal).

From 1977 up to 2011 he worked for University of Amsterdam, the last 12 years as Director and Professor of AMSTEL Institute. After the discontinuation of this Institute he now is Director of CMA, the Foundation he established in 1987. CMA always has been involved in the development and distribution of the Coach environment, and now has broadened its activities with f.i. in-service teacher training and EC-projects.

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*A new GIREP committee was elected in Reims in August 2010. Here follows a short self-introduction of the new committee.*

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**VICE PRESIDENT: Ian Lawrence**

Ian Lawrence taught in schools for nearly 20 years in both hemispheres, then taught in a university for a further 7, training teachers of physics. He now works for the UK Institute of Physics, supporting teachers of physics. He was Vice-President of GIREP 1996-2002, was let off for a few years, and rejoined the committee in the same role in 2006.

Two unexpected surprises along the way were election to FlInstP in 1997 and the being awarded the Bragg medal in 2002.

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**VICE PRESIDENT: Wim Peeters**

Wim Peeters has been a secondary school physics teacher for 27 years. During the last 10 years his job gradually shifted towards a 100% teachers' coach job. This implies contacts and all kinds of help and trainings for about 700 teachers spread over 300 schools in Flanders. He is also curriculum maker. Apart from that Wim is highly involved in EU projects concerning Life Long Learning and Science in Society, focusing on physics and physics teachers. In the past years he has become more and more involved in primary education, too. He established (with others) a non-profit organization, PONTOn vzw, promoting and supporting science education in Flanders and Europe.

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**TREASURER: Leoš Dvořák**

Leos Dvorak is associated professor of physics at the Faculty of Mathematics and Physics and the deputy head of Department of Physics Education at Charles University in Prague. He started his career in theoretical physics, namely in general relativity (RNDr. in 1976, CSc. – equivalent of Ph.D. – in 1982). Then his interests gradually shifted first to computers in education and later to more general questions of physics education, teacher training, simple experiments in physics teaching and learning and also to informal physics education.

Leos has been engaged in pre-service training of physics teachers for about 30 years, giving courses on physics and physics education. In recent years, he has been strongly engaged in in-service physics teacher training.

Leos Dvorak is president of Czech "Physical Pedagogical Society", part of the Union of Czech Mathematicians and Physicists (since 2010). Since 2009, he is a member of the International Commission on Physics Education (commission C14 of IUPAP). Apart from this, he is also involved – and, in fact, happier – in less formal activities, e.g. "spring camps for future physics teachers" or "Heureka" (an informal project for in- and pre-service Czech physics and guests from other countries). He cannot imagine life without books and music. And, of course, without good people around.

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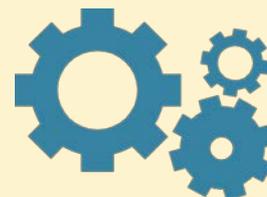
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**Secretary: Claudia Haagen**

Claudia has 8 year background as a high school teacher in physics. She earned her PhD in Science Education from the University of Graz in 2005. During her teaching career Claudia took part in many national projects as well as in EC projects on science teaching (COMEUPHYS2000, Crossnet). Since 2009 Claudia holds the position of a post doctoral research associate at the Austrian Educational Competence Centre for Physics at the University of Vienna. There she is involved in pre-service high school teacher education (physics) as well as in in-service teacher training. Her main research interests are language and science education, standards in science education, students' conceptions and conceptual change strategies in optics.

Claudia is also the Secretary of the *Austrian Association for the Promotion of Physics and Chemistry Teaching* (VFPC). She is also involved in the organisation of Austrian biggest annual teachers' conference ("Fortbildungswoche") for chemistry and physics teacher on the secondary level.

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The new GIREP Committee is looking forward to a good cooperation with all GIREP members and associates

## GIREP-EPEC 2011 Physics Education Conference in Jyväskylä

Physics education researchers, physicists and physics educators from all over the world gathered to exchange ideas and research at the GIREP-EPEC Conference "Physics Alive", held at the Physics Department of the University of Jyväskylä, Finland, August 1-5, 2011. GIREP-EPEC 2011 was a joint event of two different organizations, the Groupe International de Recherche sur l'Enseignement de la Physique (GIREP) and the Physics Education Division of the European Physical Society (EPS).

The University of Jyväskylä is the second largest university in Finland with 40.000 students. Jyväskylä has a long history as Finland's first Finnish language training college, established in 1863. The Physics Department, which is idyllically located right by Lake Jyväsjäri, was chosen as the Finnish Centre of Excellence in University Education for 2010-2012. There is a close collaborate between the Physics Department and the department of Teacher Education in Physics Teacher Training and Physics Education Research.



Thanks to thorough preparations and considerable efforts of the local organising committee chaired by Anssi Lindell and all involved Conference Assistants, the conference turned out to be a great success. We thank the staff of the local organizing committee, the scientific committee, the session chairs and all speakers for their excellent, informative presentations and contributions.

### Plenary talks

On Monday **Paul G. Hewitt** opened the first plenary sessions with his talk on "Equations as Guides to Thinking and Problem Solving". His presentation was centred on the idea that just as notes on a scale guide musicians, symbols in equations can guide physics students.

**Walter Kutschera** talked about the great power of gaining information about many fields by reading the isotope language. Prof. Kutschera discussed applications of stable-isotope mass spectrometry and applications of accelerator mass spectrometry to measure long-lived radioisotopes in a variety of fields.

**Carl Angell** presented results from TIMSS Advanced 2008 and discussed their implications for science teaching. The main focus of his talk was on students' mathematical competency when solving problems in physics.

**Cecilia Jarskog** gave a talk on "The Universe and its smallest constituents: mysteries in particle physics". Though she had left her laptop at Helsinki Airport she captivated the audience not only with deep puzzles of particle physics but also with exciting episodes of her life as a successful scientist.

**Dimitris Psillos** discussed theoretical issues and empirical studies concerning the development and application of Teaching Learning Sequences (TLS). He also emphasised the importance of a Design Based Research approach to strengthen the ties between research and practice.



Physics Alive

## Plenary talks ctd.

**Matti Weckström's** presentation did not only give insight into biophysical research but also into the problems and challenges connected with teaching such an interdisciplinary field.

**Lynn Bryan's** talk focused on the importance of professional development (PD) of teachers as a fundamental component of educational reforms. She discussed research findings on high-quality learning experiences for teachers and implications for design principles for the PD of physics teachers.

**Arttu Luukanen** gave an overview of efforts in developing imaging instruments in the THz frequency range. A special emphasis was given to stand-off security screening applications.

**Wendy Adams** talked about "Possible ways to integrate simulations into your classroom". Besides discussing a wide variety of activities that can be done around PhET simulations, she also gave examples of classroom research studies.

## Parallel sessions, workshops and posters

Large conferences always force participants to choose between parallel sessions, workshops and symposia. There was a wide range of high quality contributions and we want to thank all speakers.

## Conference Dinner & Smoke Sauna

One of the most outstanding events was the conference dinner at the Majakoski estate. The announced highlight of that evening was the change to experience a genuine **finish smoke sauna**.

However, this was even topped by a talk given by **Jouni Viiri** right after the conference dinner. The findings presented in Mr. Jouni Viiri's talk should revolutionize science education research from its ground. "**The effect of sauna baths to PISA results**" was the title of the study carried out by **Dr. S. Auna of the Finnish Sauna Research Institute**, a close friend of Jouni Viiri.

## POSTER CONTEST WINNER

Tomáš Franc is a first year Ph.D. student at the Astronomical Institute of Charles University in Prague, Faculty of Mathematics and Physics. He gained his Master Degree (Mgr.) as a Physics and Mathematics teacher at Higher Secondary Schools in 2010. Since then he is working on his a Ph.D. thesis in the field of Physics Education and General Problems of Physics, "Selected gravitational effects in the Universe". At the Girep-Epec 2011 conference Tomáš Franc's poster with the title "Gravitational Assisted Trajectories – making your own pictures and trajectory study" won the poster contest. The poster presented one way how to start teaching the gravitational assist: obtaining data from the NASA homepage, importing into a suitable program and plotting nice pictures like 2D and 3D graphs of a trajectory of any spacecraft which used the gravitational assist and much, much more. The amazing thing is that it was Tomáš' first conference and the first poster he had ever presented. Congratulations!



Poster winner Tomáš Franc

## EPS Physics Education Division Award for Secondary School Teaching



Becky Parker – Teacher Award winner

Becky Parker was awarded the EPS Teacher Award. Becky Parker is head of physics at Simon Langton Grammar School for Boys and director of the Langton Star Centre. She was named a Member of the Order of the British Empire in 2008 for her work in science education. Congratulations!

## WCPE 2012



## Welcome to the World Conference on Physics Education

We are looking forward to seeing physics educators, teachers, researchers, and policy makers from around the world at this very first World Conference on Physics Education to be held in Istanbul in July 2012. The conference was initiated by Groupe International de Recherche sur l'Enseignement de la Physique (GIREP) and the International Commission on Physics Education (ICPE) – Commission 14 of the International Union for Pure and Applied Physics (IUPAP). It is being sponsored by GIREP, ICPE and the Multimedia in Physics Teaching and Learning (MPTL) group and endorsed by American Association of Physics Teachers (AAPT), Latin American Physics Education Network (LAPEN) and the Asian Physics Education Network (AsPEN).

The vision for 2012 World Conference on Physics Education is to follow a global participative process before, during and after the conference. The Conference will be structured to help foster collaborations on physics education research and development which can transcend national boundaries. The goal will be reached through working sessions which will develop actions plans that strengthen the teaching and learning of physics at all levels and in many countries.

The 2012 World Conference on Physics Education will be a concrete step forward in global cooperation. Envisaged as a series of conferences with a four year periodicity, it would be a working conference with follow-up actions that presumably would carry over to the following conference.

WCPE2012 will pay special attention to attract more physics teachers. There will be a separate 2 day program for teachers (getting in touch with other teachers and researchers, exchanging ideas, materials, ...).

[www.wcpe2012.org](http://www.wcpe2012.org)

## GIREP Membership renewal & fees

2011 is drawing to an end. We want to thank all members for supporting GIREP in 2011 and hope for further support. Fees for GIREP membership are again due at the beginning of 2012. Payment information can be found on the GIREP homepage (<https://www.girep.org/information.html>).

We also invite everybody interested in physics teaching and learning as well as in physics education research to join GIREP. You can become member easily. Just follow that link: <https://www.girep.org/register.html>

## What's going on? – Newsflashes from countries

This is a new section of the GIREP newsletter informing GIREP members what's going on in the GIREP member countries. We would like to invite you to contribute to this section.

Send your contributions to [claudia.haagen@unvie.ac.at](mailto:claudia.haagen@unvie.ac.at).

### PONTOn challenge in Flanders

The small non-profit organization **PONTOn**, famous in Flanders for its hands-on teacher trainings (each training goes along with a box with all experiments they are trained in) will organize a "challenge" to support attendance to WCPE. Teachers will be invited to develop a teaching sequence that lasts at minimum for 2 lessons and that excels in creativity, students' activities, research competences, nice experiments, adaptation to the curriculum, etc. Teachers will need to prove that they have actually given the lesson. The winner will be announced during a small conference where participating teachers exchange their lessons. He/She gets the chance to go to Istanbul in July 2012.

This challenge will be announced during the Flemish science teacher conference in November 2011, and on [www.pontonvzw.eu](http://www.pontonvzw.eu) so that the majority of the teachers will know about the WCPE.

### Conferences of physics teachers in the "heart of Europe"

Three conferences for physics teachers took place in the Czech Republic in the autumn 2011 that may also be interesting for GIREP members from other countries and physics educators in general. In fact, the purpose of this text is not only to inform you but also to invite you, its readers, to two of those events in 2012.

Maybe you wonder why to organize three conferences on physics education within two months. Does it make sense? Isn't it too much? Well, the concentration of these conferences in September and October is due to historical reasons. But what is important is the fact that each conference has its own purpose, its distinctive character, and its special "flavour". Let's look briefly at this year's conferences:

#### Physics Teachers' Inventions Fair

The **Physics Teachers' Inventions Fair 16** took place in Olomouc (in Moravia, the east part of the Czech Republic) at the Faculty of Science, Palacky University from September 2<sup>nd</sup> to 4<sup>th</sup>. It is a traditional annually conference that brings together physics teachers from all types and levels of schools in one hall. There are no sections, so there is no need to run from one room to another, no complaints that two interesting talks are in parallel. Also, talks should not be theoretical but they should present experiments (mostly "live" ones), activities etc. directly useful for teachers in schools. Typically, the most interesting and most applauded talks are presented by teachers themselves.





Fig. 1. Real experiments are the most appreciated at the “Physics Teachers’ Inventions Fair” (Czech physics teacher Václav Pazdera; Anna Hajdusianek from Wrocław Univ. of Technology, Poland.)

The fifty talks presented this year were attended by 107 participants who were mainly teachers from the Czech Republic. In the past there used to be more visitors from abroad. But some visits from foreign colleagues led to unexpected results: A few years ago, physics teachers from USA established a similar conference “Teslamania – Physics Teachers’ Innovation Fair” at Suffolk County Community College in Long Island, New York City. Even in the year 2010, they cited the Czech conference as their inspiration, see <http://teslamania2010.eventbrite.com/>. So you can see, you do not have to be afraid of language barriers – just come and attend our “Fair”. The next one will take place in Prague from August 31<sup>st</sup> to September 2<sup>nd</sup> 2012.

### Heureka Workshops

The **Heureka Workshops** at the beginning of October are a completely different event. They take place in a high school, Jiraskovo gymnázium in Nachod, a nice but rather small town in north-east Bohemia, close to the Polish borders. It has a form of set of workshops, each lasting 90 minutes. Typically, seven or eight workshops run in parallel, so participants are quite free to choose which one to attend. Most workshops are repeated four times between Friday evening and Sunday afternoon.

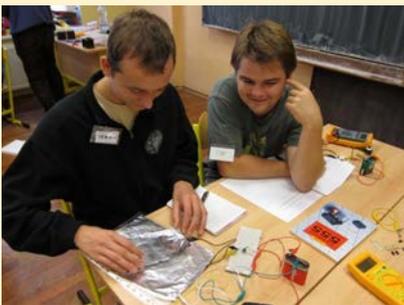


Fig. 2. Participants at authors’ workshop “Capacitors and coils”; Gorazd Planinšič explaining some problems in his workshop “Simple experiments with multiple explanations”.

Being part of an informal Heureka project, the conference is also far from formal. There is no fee, all participants stay in the school building all the weekend, sleep in their sleeping bags in classes (when they do not discuss some experiments or teaching problems or play the guitar till late at night) and eat what they bought in a nearby supermarket. Seems to be crazy? Maybe a bit, but both the program and the atmosphere are a worthwhile experience. In 2011, the 19 workshops of the 10<sup>th</sup> Heureka Workshops were attended by a “record-breaking” number of 105 participants, including Alex Kazachkov from Ukraine and Gorazd Planinšic and two of his PhD students from Slovenia.

So think about coming to **The Heureka Workshop 2012** next year, which is going to take place in Nachod, Czech Republic, from October 5<sup>th</sup> to 7<sup>th</sup> 2012. Note: Sleeping in sleeping bags is not obligatory; there are good hotels in Nachod ☺.

### How I teach physics 2

The seminar **How I teach physics 2** took place in a small hotel near the village Vlachovice in the hills of the region Vysocina, from October 12<sup>th</sup> to 15<sup>th</sup>, 2011. This bi-annual seminar focuses on teaching physics at lower secondary school level. Though smaller than both above mentioned events (about 45 participants, 22 talks and 4 workshops), it was a pleasant meeting focused on concrete problems and proved again to be really useful for the participating teachers. Well, perhaps in two years also some other foreign guests from other countries than Slovakia (which we in fact do not perceive as foreigners) may appear even at this seminar...

Short reports from previous years of some of conferences mentioned above are:

*Swinbank L.: Reporting from a mattress in Nacho. Phys. Educ. 40 (Jan. 2005), 5.*

*Planinšič G.: Teachers share experiment know-how. Phys. Educ. 41 (Jan. 2006), 7-8.*

*Milbrandt R.: Innovative Physics Teaching Conferences in the Czech Republic. Phys. Teach. 48 (Sept. 2010), 395-396.*



Though organized by different institutions and having different character, all three conferences have already proved to play well established roles in helping physics teachers and educators to share and exchange their ideas, problems and experience – even across borders of the Czech Republic. If you would like to “try it out” just let us know. We would be glad to see you either in Prague or in Nachod.

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**Please send contributions for next GIREP Newsletter till January 2012!**