

# World Year of Physics 2005

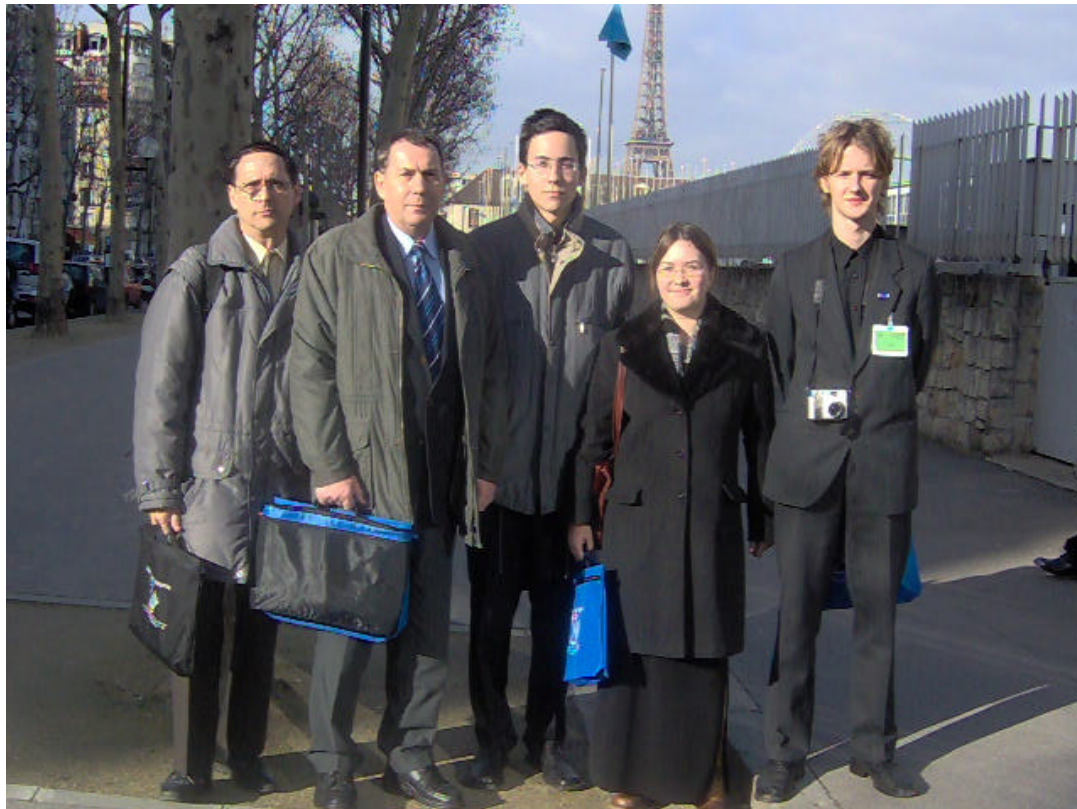
## *Activities in Slovakia*



The majority of activities connected with World Year of Physics (WYP) was managed, prepared or realized by members of the **Slovak Executive Committee (SEC)** under direction of the President of Slovak Physical Society, Ass. Prof. Jaroslav Staníček. Activities of SEC introduced in the **Slovak National Action Plan (SNAP)** submitted in application for the present collaboration have two main aspects: participation in the international activities and in the national events. Due to the fact that the promised grant support from the European Commission came rather late, the finances for the activities were obtained mainly from the Slovak Physical Society (SPS) and domestic sponsors. Since the expenses have to be refinanced from the grant, this report concentrates on the description of individual parts of the project. Number of projects and activities done in Slovakia was better off projects and activities introduced in SNAP.

The main activities were:

- 1) The attendance of Slovak delegation (3 students + 2 senior physicists) at the **Launch conference of WYP** (Paris, January 13-15). This became a great impulse to start the whole spectrum of activities.



Slovak delegation at the Launch conference of WYP.

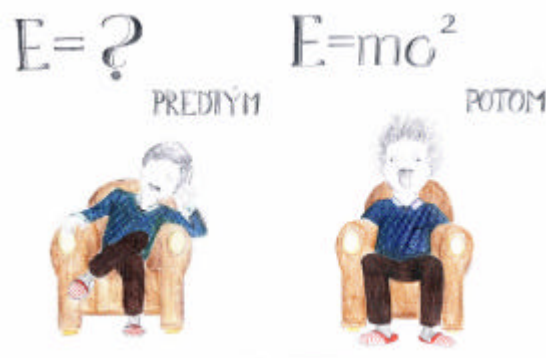
- 2) **Search for Talents in Physics** (STP) became the first activity of international scope with massive participation of youth. Shortly after receiving international regulations they were translated into Slovak language, completed by tasks of SEC and disseminated into elementary and high schools. The competition started on March 21 and finished after 5 months, on August 21. More than 250 students planned to participate in the competition but the summer holidays reduced this relatively high number of potential participants and finally 92 young people participated in STP. The domestic jury has evaluated the products and 6 names of most successful students with best score were sent to international organizing committee to become declared Physics Ambassadors. The certificates for Young Physics Ambassadors together with personal letters undersigned by Nobel Prize winners were received during October. Besides International Physics Ambassadors, there are additional 20 Slovak students who also accomplished international criteria and they will receive International Honorable Mention certificates within days. In addition, to encourage involvement of as many young people as possible all participants with more than 10 points will be rewarded by the SPS.
  
- 3) The main international activity with huge participation of young people in Slovakia was project **Physics enlightens the world** (PEW). After the entrance and exit times and places for the light signal became known, we tried to choose the most reliable way how to fulfill the task. Several modes of transport of the light signal through the territory of Slovakia (open-air fires, „classical“ step-by-step signaling by car lights, transport of the signal by using telecommunication optical cable, use of army airplanes) were discussed but all of them needed much more time to be ready and sure or they were depending on good weather (what is not sure in April). Finally, an untraditional way of performing the task was chosen: we decided to use flares fired *simultaneously* in direct visibility distances one from other. In such a way, the signal coming at 21:55 from the entrance point (flashes of powerful searchlight of a border guards-man on Poland-Slovakia border, near Zwardon) was followed by a chain of flares fired by teachers and mayors at the same time at 39 various places on the line between entrance point and Bratislava as the exit point (to Austrian Berg). Due to the extremely high speed of light, the signal was practically in the same time transported to the Faculty of Mathematics, Physics and Informatics of the Comenius University in Bratislava and here „conserved“ as a flame of candle up to the moment of sending out the signal to Austria. The signal was sent to Austrian Berg as expected, at 22:25 by a flare fired in presence of approx. 300 - 400 young people who came to the university campus.

The main route of the Lights Signal in Slovakia:

Zwardon – Skalité – Cierne – Svrčinovec – Cadca – Krásno nad Kysucou – Dunajov – Kysucký Lieskovec – Kysucké Nové Mesto – Brodno – Žilina – Horný Hricov – Kotešová – Bytca – Predmier – Plevník-Drienové – Považská Bystrica – Udica – Nosice – Púchov – Beluša – Košeca – Dubnica nad Váhom – Trenčianska Teplá – Trenčín – Chocholná-Velcice – Ivanovce – Nové Mesto nad Váhom – Horná Streda – Piešťany – Veselé – Malženice – Trnava – Báhoň – Pezinok – Vinicné – Svätý Jur – Raca – Bratislava – Berg (Kitsee)



- 4) At the university campus they participated in the **Science Show**, which was opened at 18:00 and finished by sending out the light signal to Austria. During the show, participants could see many interesting experiments and/or hear various short (20 min.) lectures; they could see all drawn jokes with physics topic sent to organizers within the separate competition.
- 5) At the same day, physics teachers at many places (more than 35) also outside the main light chain of Slovakia carried out individual happenings and/or **local light relay** at the occasion of PEW.
- 6) The **National Competition of “Cartoon Physics Jokes”** was closed during that evening. Both Internet and personal voting has been used. (For details see [www.scholaludus.sk](http://www.scholaludus.sk)). Simultaneously with it, participants could play with **Interactive Exhibits** of Schola Ludus and just before ending the evening, there was a performance with the **Laser Show**.



Einstein “before” and “since” (from the Competition of “Cartoon Physics Jokes”)

- 7) Independently of this activity, in the same evening, another way of sending signal to Vienna (and back) was performed by a group of physicists from the Research Centre for Quantum Informatics of the Slovak Academy of Sciences: the entangled photons were used to send an **Encrypted Information** to their Austrian colleagues in Vienna.
- 8) The WYP2005 celebrating **Wall Calendar** for 2005 with the WYP logo has been published and widely distributed.
- 9) To commemorate the WYP2005, the Slovak **Post office Stamp** with the physics motive has been released for public use. The **Inauguration Ceremony** has been held at the Presidium of the Slovak Academy of Sciences with **Reception and cultural program**.
- 10) The excursions of pupils and teachers (cca 110 visitors) to **Cyclotron Centre** at Bratislava have been organized being accompanied with lectures and refreshments. Lectures concerned mostly nanotechnologies, radioisotopes and their applications in medicine.
- 11) The **Press and Media Conference** for the WYP was held.
- 12) Collaboration of SEC with other **Science related professional societies** in Slovakia was held.
- 13) Collaboration of SEC with the **Physical Societies** of neighboring countries was increased.
- 14) Several **Seminars for High school and Primary school Teachers** with information on both world and Slovakia's WYP activities and particularly on the **School Physics Experiments** were done.
- 15) The **Two-days Seminar with Experiments** on „Archimedes law in untraditional problems“ and **Excursions to Laboratories** of Slovak Technical University and Faculty of Mathematics, Physics and Informatics of Comenius University and detailed information on WYP has been done for 39 successful participants of Physics Olympiad (E category).
- 16) In April, there were two **Performances** of the 3D movie „Space Station“ with **Lectures** about WYP and space research for 800 secondary schools participants.
- 17) In May, 430 pupils have attended the **Physics Day** in Bratislava from 28 schools from various regions of Slovakia.



Participants of the Physics Day.

- 18) 121 pupils from 19 elementary schools attended the **Competition in Painting** on the theme “Inventions and Inventors”.
- 19) The **Two Lectures** “Einstein’s contribution to physics” and “Einstein and Slovakia” were presented in the Physics Clubs in Bratislava and Kosice. These lectures were presented for general public at various cities in Slovakia.
- 20) The **Series of Lectures** on physics and WYP2005 were presented for public at various occasions.
- 21) More than thousand **secondary school students and their science teachers** attended lectures on various science topics. Part of these courses namely the **Master classes of Particle Physics** were done via internet by means of the interactive VRVS system implemented by the group of active scientists and university teachers networking throughout Slovakia. The response of the secondary school (high school) students was very positive. Mainly in Kosice, Krompachy, Michalovce, Zilina and Bratislava.
- 22) About a **dozen of lectures** combined with performances and experiments were given to the **primary school pupils** at their schools. The lectures and performances were delivered also to science teachers at the specially organized conferences.
- 23) The **Two Video Conferences** “Cosmos and You”, “Obscuration of the Sun” in Kosice and Zvolen were performed and available for schools within a common net.
- 24) SPS **Website** innovation was regularly done.
- 25) Six presentations of WYP in **Slovak Radio** (two of them in German language in international program of the Slovak radio), five in **Slovak TV**, four in **Local TVs** (Bratislava, Kosice) and several **Newspaper Presentations** – were done to inform wide public about WYP and related projects.

- 26) Special support at occasion of the WYP was given to the best solution of the experimental problem in **Physics Olympiad**, the **Correspondence Seminar of Physics**, the **Tournament of Young Physicists** and the **Competition of the Scientific Papers of Slovak Young Physicists**.
- 27) **15<sup>th</sup> Conference of Slovak and Czech Physicists** held at Košice, September 5-8, organized jointly by the Slovak and the Czech Physical Societies – was a scientific culmination of WYP on national level.
- 28) The winners of scientific and artistic categories of the Physics Day and the STP competition participated together with teachers ( 54 students and 28 teachers) on two **Excursions at Budapest**. There visited the educational reactor at the Technical University and the Exhibition of the Interactive Physics Experiments at the Palace of Mystery. Excursions were in December 9 and December 13, 2005.
- 29) The **National Competition “Science is changing the world around us”** was organized jointly with the Ministry of Education of Slovakia. It was the painting and creativity competition in three categories. The winners received prizes from the hands of Slovak Minister of Education, the European Commissioner for Science and the British ambassador to Slovakia. The ceremony took place at the Slovak Week of Science.
- 30) For the Slovak Science Week in Slovakia, the SEC in collaboration with SPS prepared **Four Exhibitions**. One of them was the exhibition of the best works of the National Competition **“Science is changing the world around us”**. The next one was the exhibition of the **“ITER Project”** devoted to the fusion reactor. The third exhibition **“Radon Radiation Hazard Survey”** explained one of the science contributions to the environmental protection. These exhibitions were presented at the various public spaces of the Comenius University in Bratislava. The fourth one **“The World at Absolute Zero”** showing the peculiar behavior of materials and of the liquid He3 was presented at the lounge of the Safarik University in Kosice.
- 31) Several conferences, symposia and seminars were done. At least some of them need to be mentioned: The one day **“Teachers Seminar”** in Bratislava, **„Science Teachers Activists Conference”** in Kosice, attended by 40 enthusiastic teachers.
- 32) Many schools (primary, secondary) held the **Exhibitions and the Academies** – songs, performances, poems at the occasion of WYP.
- 33) A part of the **12<sup>th</sup> Soltes’ days seminar** (regular annual event with participation more than 100 Physics teachers) was devoted to WYP – lectures and performances by pupils of secondary schools.





Performance: Episode from the life of Archimedes.

- 34) From December 31, 2005 to January 4, 2006, the Slovak delegation (six Young Physics Ambassadors and two senior physicists) participated in the **International Physics Young Ambassadors Symposium (IPYAS)** at Taipei, Taiwan.



The Slovak delegation (with Taiwanese guide) in Taipei.

- 35) In Slovak radio an interview with one student of Slovak delegation at IPYAS and her Physics teacher appeared a week after the return to Slovakia. Wide information on WYP and IPYAS was given to youth in debates of our IPYAS participants at their schools. More articles on WYP and IPYAS are going to appear in journals on local as well as national level.

In Bratislava, January 2006

Jaroslav Staníček  
Coordinator WYP2005 for Slovakia