

World Year of Physics 2005 in the Czech Republic

Remark. The main abbreviations used in the following are UCMP: Union of Czech Mathematicians and Physicists, CPS: Czech Physical Society (a section of UCMP), PPS: Physics Pedagogical Section of UCMP, ASCR: Academy of Sciences of the Czech Republic. See the Appendix 2 for further explanations.

WYP2005 coordination

The formerly existing structures used.

Main national organization involved: UCMP.

National coordinators: The Presidents of UCMP and CPS.

Committees: UCMP Presidium, CPS Committee, UCMP Committee (all of them care on WYP2005 at every session). Czech National Science on Stage Committee (freely related to CPS and PPS).

UCMP closely collaborated with ASCR and Universities. Some other organizations organized their own activities intentionally or even unintentionally related to WYP2005 (Czech Head, British Council Czech Republic, Young Debrouillards, journalists).

Funding

UCMP (including its sections CPS and PPS) had no extra support for WYP2005. A limited part of the own budget of UCMP was used (of about 1000 EUR).

The other organizations involved in the WYP2005 activities used their budgets and sponsor supports (the amount and sources are not exactly known to us). In general, there were no special supports for WYP2005 in the Czech Republic and we guess that total expenses were about 50.000 EUR (a large part of it used for TV relations and would be spent independently of WYP2005).

WYP2005 Activities in the Czech Republic

General public can be addressed mainly through TV and other media. In TV, there were a few relations on physics in the program "Popularis". There is a new program "Czech Heads" consisting of 1-2 minutes shots on the recent results of Czech scientists. The program is transmitted roughly twice in a week and about 30 relations were on physics or related to physics in 2005. Czech Radio is broadcasting a very good popular program on science "Meteor" for long years. A number of relations in 2005 included subjects on physics. Physics or WYP2005 were also mentioned in several publicistic and other relations in TV and broadcast. Several articles on Einstein and physics were published in newspapers and magazines, some of them consulted with physicists and some written by journalists independently of physicists.

The journalists were addressed among other through 2 press conferences and a round table organized by ASCR together with UCMP.

Demonstrations of simple experiments for general public were done within the action Science in the Streets organized by Czech Head project in Prague and Pilsen. Exhibition "The World as I See It - a Honor to Einstein" was installed at the Technical museum in Brno under an intensive participation of physicists.

Several popular books on physics and on scientist including physicists were published. A videocassette Accelerators and Detectors was issued.

A postage stamp with the motive $c=\text{constant}$ was issued.

Open doors days were organized at the institutes of ASCR and at the Universities with a special attention to physics. Lectures for the secondary school students were given at ASCR. Both attended by hundreds of students.

Several competitions of pupils and students were organized. Most of them are held every year but in the year 2005 the connection to WYP2005 was stressed. Fully inspired by WYP2005 was the competition “For the best videorecord of a physical experiment” organized and sponsored by British Council Czech Republic.

For the physicists and physics teachers, several conferences were organized. The main event for physicists was the 15th Conference of Slovak and Czech Physicists in Kosice (Slovakia), traditional general (bi)national physics conference held in three years periods. The anniversaries of George Placzek (Brno 1905 – Zurich 1955) were celebrated by symposium in Brno, the city where he was born.

We mention here the main activities regardless which institution initiated and realized them. The role of UCMP in these actions varied from 0 to 100%. More complete list of activities is given in Appendix 1.

Impact

Lectures for secondary school students, public demonstrations and open days were attended by large numbers of young people. So it seems that they were interesting for them. We are not able to determine if new interest in physics was initiated or if they came because they were already interested in physics. We hope that the interest in physics was strengthened in any case. The TV relations were also successful as physicists were often addressed by laymen from their environment next days.

The international propagation of WYP2005 had apparent effect on Czech journalists. Their interest in physics and physicists clearly increased substantially in 2005.

WYP2005 had surely a positive impact on a part of young people and general public. However, a large part of the public did not care and nothing else could be expected; it is a natural situation.

Experiences

Most effective are probably actions in TV on the one hand and individual work with small groups of students on the other hand.

The help of public relations professionals and some financial support are necessary for efficient propagation of physics.

Physicists usually like more their own small projects, they are rather reluctant to large projects organized from above. A substantial cause of that are also time reasons.

Popularization and public awareness of physics are necessary but it is a long slow process and no dramatic breakthrough can be expected. It is suitable to include propagation of physics into broader propagation of science.

Jaroslav Dittrich
The President of CPS UCMP

Stefan Zajac
The President of UCMP

APPENDIX 1. List of Czech Activities within WYP2005

1. Activities aimed to general public

1.1. Information Media

a) Television

- Local South-Moravian Program, Aug. 25 and 28, 2004: Information on WYP2005 in the reports on 9th Fair of Physics Teachers Inventions (Brno, Aug. 25-27, 2004)
- TV Praha, Jan. 18, 2005: Interview with S. Zajac on the WYP2005
- [CT 1](#), Jan. 19, 2005: Interview with S. Zajac and B. Dusek on the Paris launch conference of WYP2005
- [CT 1](#), Jan. 30, 2005 - program "Bez obalu" ("Without cover"): On the Einstein's 3 fundamental 1905 works, especially the theory of relativity, Einstein's life, and WYP2005 (J. Grygar, I. Havel, S. Zajac, moderator M. Sima)
- [CT 2](#), Feb. 22, 2005 - program Popularis: World year of physics
- [CT 1](#), March 3, 2005 - program "U nas v Evrope" ("At us, in Europe"): Interview with T. Jungwirth and V. Novak on the physics collaborations within European Union
- [CT 2](#), Apr. 20, 2005 - program Popularis: Vortices of superconductivity
- [CT 2](#), Oct. 12 and 19, 2005 - program Popularis: Safe depths I, II (on the radioactive waste storing)
- [CT 1](#), Oct. 12, 2005 – South-Moravian evening program: A spot from the exhibition "The World as I See It" in Brno (see Sect. 1.3)
- [CT 2](#), Nov. 9, 2005 - program Popularis: Metallic crystals
- [CT 2](#), Nov. 30, 2005 - program Popularis: The shields of Earth (on the magnetic field of the Earth and the ionosphere)
- [CT 1](#) - program Czech Heads: few-minutes spots on the recent outstanding results of Czech scientists, more than 30 spots in 2005 were related to the physics

b) Broadcast

- [Czech Radio](#) 6, Jan. 3, 2005: Interview with S. Zajac on the WYP2005
- [Czech Radio](#) 3 Vltava, Jan. 20, 2005: A short interview with several student participants of Paris launch conference and J. Dittrich
- [Czech Radio](#) 2 Praha, Jan. 30, 2005 - program Meteor: On the Michelson-Morley experiment and the special theory of relativity (editor I. Budil)
- [Czech Radio](#) 2 Praha, Feb. 1, 2005: A short interview with T. Jungwirth on the spin Hall effect
- [Czech Radio](#) 2 Praha, Feb. 1, 2005: Commentator J. Petranek mentioned WYP2005, Einstein, the importance of physics in contrast with lowering interest in physics and chemistry all over the world
- [Czech Radio](#) 2 Praha, Feb. 5, 2005 - program Meteor: Super massive black holes (J. Grygar)
- [Czech Radio](#) 2 Praha, Feb. 6, 2005 - program Periscope: Interview with J. Grygar on the Pierre Auger Laboratory
- [Radio Prague](#) - the international service of Czech Radio, Feb. 8 and 15, 2005: Interview with S. Zajac on the [WYP2005 Czech activities](#) and [Einstein and Prague](#)
- [Czech Radio](#) 2 Praha, Feb. 19, 2005 - program Meteor: A look towards beginning of the Universe by the new telescopes (J. Grygar)
- [Czech Radio](#) 2 Praha, Feb. 26, 2005 - program Meteor: The Chernobyl event
- [Czech Radio](#) 2 Praha, March 19, 2005 - program Meteor: Neutrinos as possible future probes of the Earth interior

- [Czech Radio](#) 3 Vltava, April 14, 2005: How A.Einstein changed our perspective of the world (J. Olivova, J. Bicak, J. Dolejsi)
- [Czech Radio](#) 3 - Vltava, April 24, 2005: Space, time, energy – Einstein (J. Olivova, J. Langer, J. Obdrzalek)
- [Czech Radio](#) 2 Praha, Apr. 30, May 2, 2005 - program Meteor: Interview with J. Grygar on the cosmic radiation and Pierre Auger Laboratory
- [Czech Radio](#) 2 Praha, Apr. 30, May 7, 14, 21, 28, June 18, 25, 2005 - program Meteor: A visit in the nanoworld (cyclus on nanotechnology; P. Kluson, I. Budil)
- [Czech Radio](#) 2 Praha, May 14, 2005 - program Meteor: The gravity law verified even at small distances (J. Grygar, I. Budil),
- [Czech Radio](#) regional service North, June 11, 2005 - program Planetarium: World Year of Physics (J. Kralik, D. Novotny)
- BBC Czech Program Praha, June 20, 2005: Traveling in time (S. Zajac)
- [Czech Radio](#) 2 Praha, July 23, 2005 - program Meteor: A long fate of ether (editor I. Budil)
- [Czech Radio](#) 2 Praha, Aug. 13, 2005 - program Meteor: How large is our Universe (P. Prihoda, I. Budil)
- [Czech Radio](#) 2 Praha, Sept. 17, 2005 - program Meteor: An unknown Eistein's manuscript was found (I. Budil)
- BBC Czech Program Praha, Nov. 22, 2005: On the theory of relativity (J. Obdrzalek)
- [Czech Radio](#) 2 Praha, Dec. 10, 2005 - program Meteor: The Einstein's relativity theory is verified again (A. Vitek, I. Budil)
- [Czech Radio](#) 2 Praha, Dec. 17, 2005 - program Meteor: Why we should be members of the European Southern Laboratory. Interview with J. Palous (editor I. Budil)

c) Newspapers and Magazines for general public

- Lidove noviny ("People Newspaper"), Jan. 20, 2005: A page on WYP2005, Einstein, and the theory of relativity.
- T. Menschik: Einstein was not only a brain, Tyden ("Week") 5/2005 (Jan. 31, 2005), 24-31. Einstein's portrait on the magazine title page.
- F. Houdek: The science which we call at tsunami, Lidove noviny ("People Newspaper"), Feb. 19, 2005.
- F. Houdek: The father of the modern Czech physics - Vaclav Dolejsek, Mlada fronta dnes ("Young front today"), Feb. 19, 2005.
- F. Houdek: Einstein died before 50 years, the legend is living, Lidove noviny ("People Newspaper"), April 14, 2005.
- C. Lang: Albert Einstein, Reflex 15/05, p. 68 (April 14, 2005). Einstein's portrait on the magazine title page.
- F. Houdek: On Einstein, science and human happiness, Mlada fronta dnes ("Young front today"), April 16, 2005.
- The theory of relativity originated also in Prague, Mlada fronta dnes ("Young front today", an unsigned redaction article), ~ April 18, 2005.
- P. Skramlik: Sensation from Brookhaven: New state of matter, Technicky tydenik ("Technical Weekly"), May 3, 2005.
- M. Kaku: The tower clock helped to Einstein, Lidove noviny ("People Newspaper"), May 28, 2005.
- F. Houdek: Miraculous year 1905 changed the physics and the world, Mlada fronta dnes ("Young front today"), June 4, 2005.
- E. Vlckova: The Scientists are revealing the birth of Universe, Lidove noviny ("People Newspaper"), May 30, 2005.

- F. Houdek: A grenade bounced by a paper (95 years of the atomic nucleus discovery by E. Rutherford), Lidove noviny ("People Newspaper"), Dec. 19, 2005.

1.2. Books for general public

- I. Kraus: Dejiny technických ved a vynalezu v českých zemích (**The history of technical sciences and inventions in the Czech lands**), [Academia](#), Prague 2004; [Příběhy učených žen](#) (**Stories of the Learned Women**), [Prometheus](#), Prague 2005
- I. Stoll: [Historiky o slavných fyzicích a matematicích](#) (**Stories on the famous physicists and mathematicians**), [Prometheus](#), Prague 2005

1.3. Exhibitions and street demonstrations

- [Science in the Streets](#) - Prague, June 23-24, 2005 and Pilsen, September 22-23, 2005 - organized by [Czech Head](#) project. See also J. Dolejši: [People are not scared of physics](#), [Cs.cas.fyz.](#) 55(2005), 399.
- **The World as I See It - a Honour to Einstein** - exhibition (includes simple interactive experiments, among other) - [Technical museum in Brno](#), October 11, 2005 - January 29, 2006. The opening reported in the main newspapers, two broadcast programs and local TV program.
- [The Week of Science and Technology](#) November 7-13, 2005, including **Open Doors Days** at the most institutes of [Academy of Sciences](#) of the Czech Republic.

1.4. Postage stamp

- Release of **postage stamp** with theme $c=const.$ and the first-day envelope with the portrait of A. Einstein on May 25, 2005.

2. Activities aim to children and students

2.1. Student competitions

- **Physics Olympiad**
- **Young Physicists Tournament**
- Competition [For The Magician Pokuston's \("Experimenton's"\) Top Hat](#) for 11-14 years old pupils
- Competition [For the best videorecord of a physical experiment](#) for the secondary school students, sponsored and organized by British Council Czech Republic, with co-organization by Peoples Astronomical Observatory at Prostějov, under the scientific supervision of Institute of Physics ASCR and UCOMP
- Competition [Einstein 2005](#) of young debrouillards (clubs of 6-16 years old children)

2.2. Journals for secondary school students

- I. Stoll: In the sign of light cone, Rozhledy matematicko-fyzikalni ("Views in mathematics and physics") 80(2005), No. 1, p. 2.
- F. Jachim: Even the best theoretician is pleased if the measurement certifies his truth (on the light declination in the gravitational field), Rozhledy matematicko-fyzikalni ("Views in mathematics and physics") 80(2005), No. 2, p. 1.
- O. Lejnar: Inaugural conference of the International Year of Physics 2005, Rozhledy matematicko-fyzikalni ("Views in mathematics and physics") 80(2005), No. 3, p. 1.
- Z. Janout: The World Year of Physics in the mirror of philately, Rozhledy matematicko-fyzikalni ("Views in mathematics and physics") 80(2005), No. 4, p. 1.

2.3. Books for secondary school students and the public with a deeper interest in physics

- L. Eckertova: Cesty poznávání ve fyzice (**The ways of recognition in physics**), [Prometheus](#), Prague 2004.
- M. Libra, V. Poulek: Solární energie (**Solar energy**), Czech Agricultural University, Prague 2005.
- F. Fabian, Z. Kluiber: Fyzika a pravděpodobnost (**Physics and probability**), ARSCI, Prague 2005.
- Czech translation of the book **E. Schrödinger: [What is the Life?](#)**, [Vutium](#), Brno 2005.
- Czech translation of the book **A. Einstein: The Theory of Relativity**, [Vutium](#), Brno 2005.

2.4. Lectures and experiments

- Lectures organized by the Council of Scientific Societies of the Czech Republic devoted to the works of outstanding Czech physicists **A. Zacek** (1882-1961) – Feb. 3, 2005, **B. Kucera** (1874-1921) and **V. Trkal** (1888-1956) – Oct. 6, 2005, Prague.
- Physics lectures for general public at the [University of J.E.Purkyne, Usti nad Labem](#)
- Physics lectures for general public at Opava, organized by the **Opava UCMP branch and the Silesian University**.
- Lecture series on the **Theory of Relativity** for general public, Technical Museum and Masaryk University, **Brno**.
- [Physical Thursdays](#) at the [Faculty of electrical engineering, Czech Technical University](#) in Prague - lectures and seminars for students, physicists and wider audience.
- European Masterclasses for High School Students: **Hands on Particle Physics**. [Czech national event, Faculty of Mathematics and Physics](#), Charles University, Prague, March 8, 2005.
- [Physical Week](#) at the [Faculty of nuclear sciences and physical engineering, Czech Technical University](#) in Prague - for the secondary school students.
- **Physics behind every corner and at every step** - lectures series for the secondary school students at [Academy of Sciences](#) of the Czech Republic, April 12-14, 2005. Attended by several hundreds of students.
- [Eratosthenes experiment](#) - measurement of the Earth circumference: an international school experiment within the project [GLOBE \(Czech national web page\)](#) arranged), May 25 and September 21, 2005.
- **Meeting of young mathematicians and physicist**, Nekor, July 2-16, 2005 – summer campus organized by Faculty of Mathematics and Physics, Charles University for the secondary school students.
- **Summer School on Mathematics and Physics**, Dolní Dvůr, July 7-17, 2005 - organized by Faculty of Mathematics and Physics, Charles University for the secondary school students.
- **Open Science** – the project consists of experiments performed by secondary school students at the laboratories of ASCR institutes (small groups of students participated at the selected institutes under individual supervision of scientists).

2.5. Popular videocassette

- **Accelerators and Detectors** (about 20 minutes, distributed mainly to the secondary schools, available from CPS)

3. Activities aimed to journalists

- Press conference on the "Physics for Tomorrow" launch conference at Paris, release of the book Z. Kluiber: Creativity of a Teacher and Student Competitions. ASCR and UCMP, Prague, Jan. 18, 2005.
- Press conference - presentation of the postage stamp issued to WYP2005, books L. Eckertova: The ways of recognition in physics ([Prometheus](#), Prague 2004), I. Kraus: Stories of the Learned Women ([Prometheus](#), Prague 2005), and the lecture of M. Sumbera on the quark-gluon plasma (observation at Brookhaven National Laboratory with the participation of a Czech group). ASCR and UCMP, Prague, May 25, 2005
- Round table to WYP2005: On the modern physics and its interdisciplinary connections. ASCR and UCMP, Prague, Nov. 8, 2005.

4. Activities aimed to physicists and physics teachers

Remark. We include here also some publications understandable for general public but distributed mainly insight the scientific community. The WYP2005 coincided with the 50th anniversary of the foundation of Czech nuclear science institutions (Nuclear Physics Institute ASCR, Nuclear Research Institute Rez plc, Faculty of Nuclear Sciences and Physical Engineering CTU) on which various meetings were organized and booklets issued; we explicitly list only the book of C. Simane here.

4.1. Journal papers

- S. Zajac: World Year of Physics 2005, Pokroky matematiky, fyziky & astronomie, 50(2005), 1.
- J. Dittrich, Z. Kluiber, J. Obdrzalek, S. Zajac: World Year of Physics 2005 began, Ceskoslovensky casopis pro fyziku 55(2005), 68.
- M. Libra: World Year of Physics, Matematika - fyzika - informatika 14(2004/2005), 275.
- J. Obdrzalek: A meditation about one contemporary postage stamp, Matematika – fyzika – informatika 14(2004/2005), 603.
- F. Houdek: World year of physics started, Akademicky bulletin 2/2005, 1.
- O. Semerak: Albert Einstein and the century of modern physics, Pokroky matematiky, fyziky & astronomie 50(2005), 89.
- O. Bilek: Albert Einstein and Brownian motion, Pokroky matematiky, fyziky & astronomie, 50(2005), 177.
- J. Bicak: Albert Einstein and his second life, Ceskoslovensky casopis pro fyziku 55(2005), 74.
- Special issues of the "Ceskoslovensky casopis pro fyziku" ("Czechoslovak Journal of Physics", but different from the journal of the same name published in English) reviewed the physics research and the history of a few main Czech physical institutions: [Cs. cas. fyz.](#) 55(2005), No. 2, 4, 5.
- R. Halas: World year of physics was launched, Skolska fyzika 8(2005), No. 3, p. 3.
- J. Novotny: The door of relativity opened, Skolska fyzika 8(2005), No. 3, p. 6.
- A. Lacina, H. Martinaskova: The photoelectric effect, Skolska fyzika 8(2005), No. 3, p. 15.
- M. Libra: A look behind the world year of physics 2005, Jemna mechanika a optika (2006), to appear.

4.2. Books

- C. Simane: Zivot mezi atomy (**The life among atoms**), [Nuclear Research Institute Rez](#), 2005. Memoirs of the first director of Nuclear Physics Institute at Rez near Prague (founded in 1955).
- Z. Kluiber: Tvorivost ucitele a ucastnici fyzikalnich soutezi (**Creativity of a Teacher and Student Competitions**), ARSCI, Prague 2005.

4.3. Conferences

- Interdisciplinary seminar ‘**Physics and our world**’, Nectiny, Jan. 10.-13., 2005.
- **Symposium on the 100th Anniversary of the Birth of Known Czech Physicist Vaclav Petrzilka (1905-1976)**, Prague, March 25, 2005.
- **Modern Trends in the Preparation of Physics Teachers**, Srni, April 28-30, 2005.
- [4th International Conference on Physics Teaching in Engineering Education PTEE 2005](#), Brno, June 29 - July 1, 2005.
- [Physics Teachers' Inventions Fair 10](#), Prague, August 24-27, 2005.
- [15th Conference of Slovak and Czech Physicists](#), Kosice, Slovakia, September 5-8, 2005. The main Czech and Slovak WYP2005 event.
- **Mathematics at the Universities**, Herbertov, September 5-7, 2005 (physical subjects like fluid mechanics and deterministic chaos included).
- Anniversary conference [George Placzek 1905-1955](#), Brno, Czech Republic, September 21-24, 2005.
- **4th International Workshop Applied Physics in Life Sciences**, Prague, Czech Agricultural University, September 23, 2005

5. Participation at the international activities

- Launch Conference “Physics for Tomorrow”, Paris, Jan. 13-15, 2005: 9 students and 5 senior physicists participated.
- Annual Conference of the German Physical Society: “Physik seit Einstein”, Berlin, March 4-9, 2005: 2 official representatives of UCMP participated.
- EPS13 “Beyond Einstein – Physics for the 21st Century”, Bern, July 11-15, 2005: 4 senior physicists and 2 doctoral students participated.
- Pirelli - Relativity Challenge 2005: Czech program “Relativity – 7× NO” (J. Obdrzalek et al.) was selected as a finalist of the award (“top-ten”).
- Science on Stage Festival, CERN, Nov. 20-25, 2005: Czech delegation successfully participated.

APPENDIX 2. Physical societies and institutions in the Czech Republic

We give here a brief description of the structure of physical societies and institutions to enable better understanding of some parts of the report.

Union of the Czech Mathematicians and Physicists (UCMP)

A society founded in 1862, voluntary civic association of mathematicians and physicists of all levels and specializations, from primary school teachers to scientists.

Leading bodies: Committee (42 members, meeting 2× in a year), Presidium 9 persons, meeting 1× in a month), the President.

Main finance source: Membership fees.

UCMP consists of 15 regional branches and 4 sections. Each member of UCMP is a member of a regional branch and may be a member of one or more sections. The sections of UCMP are:

1. Czech Physical Society (CPS).
Members: mostly scientists and university teachers.
National Society of EPS.
Leading bodies: Committee (12 members, meeting nearly every month), the President (automatically UCMP Presidium member).
Main finance source: Membership fees.
2. Physics Pedagogical Section (PPS).
Members: university teachers interested in didactics of physics, physics school teachers.
Leading bodies: Committee, the President (automatically UCMP Presidium member).
Main finance source: Membership fees.
3. Czech Mathematical Society.
4. Society of Mathematics Teachers.

Academy of Sciences of the Czech Republic (ASCR)

A system of research institutes in all branches of science, among them several institutes on physics (Institute of Physics, Nuclear Physics Institutes, Institute of Plasma Physics, Astronomical Institute, several institutes on applied disciplines related to physics).

Main finance source: government.

Universities

Main finance source: government.

(There are also private universities but none of them involved in physics.)

Czech Head

A project devoted to the propagation of science, awarding prizes on science etc.

Main finance source: sponsorship.