Activities of the Czech National Node in the Venus Transit 2004 Project

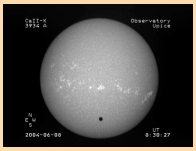
Observations of the transit

Observations were directly organized by the NN at two observatories (Ondřejov, Úpice):

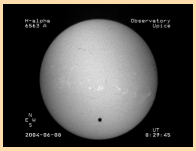
Ondřejov observatory (Astronomical institute of the Academy of Sciences of the Czech Republic). About 300 visitors had access to 5 telescopes of the solar department. The astronomers of this department provided assistance during the observations. The observatory served as one of the primary sites and selected images from the continuous monitoring with the 22 cm Clark refractor in white light and Hα filter were supplied to the central ESO server.

Úpice observatory About 400 visitors could observe the transit with 5 telescopes (solar patrol telescope - Hα and CaII filters and WL, refractor 130/1900, MEADE LX200 and others) in Úpice and about 1000 visitors with 2 small telescopes in Turnov. Both observatories provided on-line display of images at their websites.

Venus transit picture from "Multispectral solar patrol telescope" on Observatory Úpice



CaII-K channel

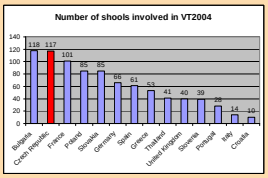


Hα channel

Other public observatories Many public observatories and astronomical clubs observed the transit according to their own programs and they used the support of our NN at a different level.

Observations at schools . The careful work of our NN with schools for some 5 months before the transit resulted in 120 schools registered in the VT-2004 project - the highest number among all participating countries. The instructions for observations were published at the web pages of our NN and in the special issue of the Astropis journal (Journal of amateur astronomers, in Czech), which was sent free of charge to all grammar schools.

Observation arrangement at Reálné Gymnázium, Prostějov



Total number of schools involved in VT-2004 project.

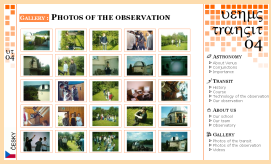
Projections for the public

Our NN arranged 3 projections of images and videos supplied in the framework of the VT-project:

- Projection from Internet in the lecture room of the Astronomical institute of the Ondřejov Observatory was prepared mainly as an emergency solution in a bad weather. Since the weather was very good, most visitors preferred observations with the telescopes and only few of them visited the lecture room. The same applies to Úpice.
- We helped to prepare the projection in the National Museum in Prague, which was accompanied with an account by one of the astronomers from the solar department. According to the report from the museum, the projection was a great success and was attended by about 500 visitors.

National competition best www pages

Czech National Node in cooperation with **British Council** in Prague arranged a national competition for creating the best websites about VT 2004 and student's observations. Students had to write 6 pages in the Czech language and the same in the English. Three winners were awarded by participation at the London International Youth Science Forum (The Science Forum brings together some 250 students of the science, from almost 60 countries in the 5 continents every year).



Screen shot of a photogallery from the winning web page http://www.inext.cz/mgv/vt2004/

TV appearance

The Czech NN established successful collaboration with the Czech public TV. Relatively numerous appearance of the Venus transit were achieved in two following forms:

Thanks to one of the most popular young editors of the Czech TV, Vladimír Kořen, the inputs about the VT-2004 project and the transit appeared several times in the main evening news, mainly in the weeks before and during the phenomenon.

POPULARIS
SCIENCE & TECHNOLOGY MAGAZINE

POPULARIS issued a special programme on the VT 2004 project. It was broadcast on June 4, 2004. You can still see it on the Czech NN pages http://vt-2004.astro.cz) as well.

POPULARIS - a popular science programme on contemporary Czech and world science and new technologies (28 minutes)

Popularis means in Latin: understandable to people, pleasant and popular to people or enjoying their favour. This popular science programme tries to reach all these aims. It brings news on new technologies and methods, informs about the latest results in basic and applied research in the Czech Republic in particular, but also abroad.

For further information, please, see http://www.popularis.cz

Radio programmes

A series of short (4 - 7 minutes) programs on different subjects connected with the Venus transit was broadcasted by the Czech radio 3 (Vltava). The programs were prepared by Ms. Jana Olivová, member of the Czech Organizing committee.

Newspaper articles

A series of articles in the "Lidové noviny" Newspaper (People's newspaper, the third most sold newspaper in the country) was written by Martin Uhlíř, member of the NN Organizing committee.

WWW pages

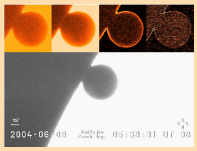
The website of the Czech NN (http://vt-2004.astro.cz) was opened as early as December 2003. Includes links to the central ESO website, photogallery from the Brandýs VT-2004 Meeting of amateur astronomers, information about activities of the NN (e.g. preparations of the DVD, observations done in the Czech Republic, competition of secondary schools for the best websites etc.), translations of all information and educational sheets, electronic versions of the newspaper articles about the transit and many other important information.

The page is one of the most visited astronomical pages in the Czech Republic. So far, we counted about 67 000 visitors, 35 788 of them on June 8, when our server had to cope with 211 907 hits and the transfer of 1.75 GB data in one day.

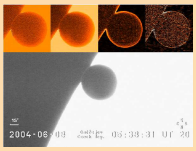
Image processing

The detailed description of the VT - images observed and processed at the Ondřejov observatory.

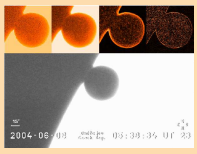
Drop-effect, 2nd contact



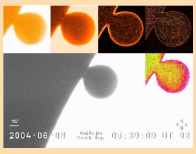
a1 - 05:38:31:08 UT



a2 - 05:38:31:20 UT



a3 - 05:38:34:23 UT



a4 - 05:39:09:02 UT

The second contact drop-effect development in time (a1-a4). Observation in the white light, orientation: South is on the top.

In the lower part is the observed original image, in the upper part are 4 details of the drop processed by various processing techniques, from left to right **A,B,C,D**:

A, B Edge crispening - performed by discrete convolution with high-pass form of the impulse response H(A), H(B).

C Edge detections - Edges characterize object boundaries and are therefore useful for segmentation, registration, and identification of objects in scenes. Typically, edge, line and spot locations are specified by dark pixels against a light background. This is exactly the case of Venus transit projection over the bright surface of the Sun.

The techniques based on the first order derivative involve generation of gradients in two orthogonal directions in an image. The row and column gradients involve a linear combination of pixels within a small neighborhood. In C the Sobel filter was applied.

D Edge detections - based on the second derivative, an edge is marked if a significant spatial change occurs in the second derivative. Performed by Laplace filter.

E a4 involves in addition the 5th detail E performed by discrete convolution with high-pass form and displayed using the isophot transformation table. The colors in the image corresponds to the exact density ranges.

Brandýs VT-2004 Meeting of amateur astronomers

The VT-2004 programme reached one of its highlights during May 7-9, about 40 amateur astronomers from most European countries met at the historical castle in Brandýs nad Labem near Prague, Czech Republic. The main purpose of the meeting was to exchange information about the numerous activities underway at that in many places all over Europe for the Venus Transit by amateur astronomers, to make the extensive resources of that public educational programme more accessible to them and at the same time to stimulate the very valuable contributions they could give to the programme. The site of the meeting had a special significance for the participants: the famous astronomer Tycho Brahe lived there in 1599-1600.

Website of the meeting: http://vt-2004.astro.cz/meeting/

Group photo at the Ondřejov observatory

website of Czech national node: http://vt-2004.astro.cz