Astrocamp
VARIABLE 2018

July 09 – 18, 2018

Szkolne Schronisko Młodziezowe w Stuposianach

Organizer:	**Vihorlat Observatory Humenné, Gmina Lutowiska**
In collaboration with:	**The Slovak Central Observatory, Hurbanovo**
Co-organizers:	Slovak Union of Astronomers, Faculty of Science Pavol Jozef Šafárik University in Košice, Non Investing Fundation Telescope, Roztoky Observatory, Gmina Wisniowa
Aim:	Variable star observing
Dates:	**09/07/2018 – 18/07/2018**
Venue:	Szkolne Schronisko Młodziezowe w Stuposianach, gmina Lutowiska
Boarding:	4 foods daily: breakfast, lunch, dinner, midnight refreshment.
Accommodation:	In accommodation facilities of the Stuposiany.
Registration fee:	**100 Euro**. To be paid at the time of arrival.
Meeting point:	09/07/2017 (Monday), Szkolne Schronisko Młodziezowe w Stuposianach at 15:^{00}.
Questions:	Should be addressed to P. A. Dubovský: var@kozmos.sk

PARTICIPANTS

There will be 2 kinds of participants in the astrocamp:

1. Researcher – the main participant. During the astrocamp is solving one of research tasks listed below
2. Supervisor – helps researchers and operators with theoretical background and technical issues connected with practical observations

Every participant is required to bring the following equipment:

1. Warm clothing, including jacket and shoes for observation during the cold night
2. Toiletry
3. Stationery - workbook, pencil, calculator
4. Watches or stopwatch
5. Identification card or passport

Will be appreciated:

6. Your own IT equipment – notebook
7. Sportswear (football, tennis, volleyball, swimming, hiking).
8. Party games, musical instruments.

Organizing comitee

The head:	RNDr. Igor Kudzej, CSc., director of the Vihorlat Observatory
Supervisors:	Mgr. Marcin Cikala, Mgr. Bartłomiej Dębski, Mgr. Gregorz Sęk, Pavol A. Dubovský, Doc.Vlada Marsakova, CSc.

DAILY SCHEDULE (in CEST = UTC+2 hours)
10^{00} - 11^{00} personal hygiene, breakfast
11^{00} - 14^{00} observational data reduction, research tasks solving
14^{00} - 15^{00} lunch
15^{00} - 19^{00} educational and sports events
19^{00} - 20^{00} BoRo – information about observing program for the night; reports of the researchers and operators
20^{00} - 21^{00} dinner
21^{00} - 02^{00} observation (~24:00 midnight refreshment)
02^{00} - 10^{00} night rest

EDUCATIONAL LECTURES

Tomáš Medulka – How to proceed when you discover new variable star
Pavol A. Dubovský – Superhumps in cataclysmic variables

RESEARCH TASKS

The research tasks remains similar to that in previous editions. This year we would like to change the final presentations. Previously these presentations were simply the reports of the researchers to inform the others participants of the astrocamp. Now, let's make the presentations like report for the public. This means explain the reasons of the given research, the importance of the acquired results for the science, how important was the possibility to make the observations under dark sky. Of course the explanation should be understandable for the public without basic astronomical knowledge.

1. C11 - Celestron CGEM 1100, 280/2800 mm, MII G2-1600 camera, filters B V Rc Ic Clear

Research Task: To construct the **Binary star model**. Determine the basic parameters of the binary star system. Use your own CCD observations of selected eclipsing binary with four photometric filters (B V Rc Ic) and precise photometry from Kepler database. It is necessary to observe at least one complete light curve (all phases). The corresponding model can be constructed using available program, for example "PHOEBE".

Supervisor: Bartłomiej Dębski
Researchers: Stanislav Savastru, Dmytro Tvardovskyi

2. CPC 925 – Celestron 235/2350 mm, QHY9 camera, without filters

Research Task: **Superhumps**. Determine the period of superhumps of SU UMa type cataclysmic variable and its evolution during superoutburst. Use your own CCD observations of the object in superoutburst during the astrocamp. SU UMa type cataclysmic variables shows typical "humps" on the light curve. The period is usually slightly longer than orbital period of binary system. The typical value of the period is 80 - 120 minutes. It is easy to determine the period of superhumps using all night time series observation. The period evolves during the superoutburst. This tell us something about precession movement of the accretion disc. Therefore we have to observe as long as possible every night during the superoutburst. It is not necessary to observe with photometric filters. The accretion disc light is white.

Supervisor: Gregorz Sek
Researchers: Tomáš Medulka, Matúš Kamenec

3. C11 - Celestron CGEM 1100, 280/2800 mm, MII G2-1600 camera, filters B V Rc Ic Clear

Research Task: To construct **O-C diagrams** of times of minima of several eclipsing binaries. Use the data from available databases and at least one personal measurement. Determine CCD time of minima using Kwee & van Woerden method (software AVE) and fitting tool implemented on var.astro.cz as well. Explain the obtained graphics.

Supervisor: Marcin Cikala
Researchers:

4. C8 - Celestron CG5, 150/1500 mm, MII G2-1600 camera, filters B V Rc Ic Clear
Research Task: To acquire several points on light curves of **Semiregular and Symbiotic variable** stars from the "MEDÚZA" list. Transform the CCD measurements into the standard photometric system using previously determined transformation coefficients. Construct the light curves using your own and archival data.

Supervisor: Pavol A. Dubovský
Researchers:

5. Dobsonian SkyWatcher 10", visual observation

Research Task: To acquire several points on light curves of "**MEDÚZA stars**" visually. Compete with the GoTo telescope in the task No 4. Perform visual estimates of selected objects using Nijland-Blazhko method during all the astrocamp. For every object – one estimate per night. Construct the light curves using your own and archival data. Include also results from research task No 4 to evaluate the quality of visual observations.

Supervisor: Vlada Marsakova
Researchers: Sofiia Kreminska, Taisiia Shakun

6. Binoculars and others

Task: To construct O-C diagrams of times of minima for several eclipsing binaries. Use the data from available databases and at least one personal visual measurement. Determine the time of minima using the **Kordylewski method** (software Protokoly). Select suitable observing targets for the given night using program "POZOR" or "Predpovedi".

Supervisor: Igor Kudzej
Researchers:

Note: The listed instruments are only preliminary and are subject to change.