



Roztoky Observatory, Vihorlat Observatory in Humenné and Gmina Wisniowa

invites you to

Astrocamp

VARIABLE 2013

August 12 - 21, 2013

GENERAL INFORMATION

<i>Organizer:</i>	Roztoky Observatory, Vihorlat Observatory Humenné, Gmina Wisniowa
<i>Aim:</i>	Variable star observing
<i>Dates:</i>	12. 8. 2013 – 21. 8. 2013
<i>Venue:</i>	Roztoky Observatory, Svidník distroct, Slovakia
<i>Boarding:</i>	4 foods daily: breakfast, lunch, dinner, midnight refreshment.
<i>Accommodation:</i>	In the Observatory's facilities. 3 – 5 beds in a room. Overall capacity is 27 beds.
<i>Registration fee:</i>	80 Euro . To be paid at the time of arrival.
<i>Registration:</i>	Use the application form at www.astrokarpaty.net . The deadline is 12.07.2013 .
<i>Questions:</i>	Should be addressed to P. A. Dubovský: var@kozmos.sk

PARTICIPANTS

There will be 3 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 with theoretical background
3. Operator – helps researchers 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: Your own IT equipment (notebook), telescope, photo camera, CCD camera

Organizing committee

The head:

Scientific assistants:

Logistic assistant:

RNDR. Igor Kudzej, CSc.

Mgr. Marcin Cikała, Pavol A. Dubovský

Daniel Baluďanský

DAILY SCHEDULE (in CEST = UTC+2 hours)

10⁰⁰ - 11⁰⁰ 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; researchers reports
20 ⁰⁰ - 21 ⁰⁰	dinner
21 ⁰⁰ - 21 ³⁰	preparation for observation
21 ³⁰ - 02 ⁰⁰	observation (~24:00 midnight refreshment)
02 ⁰⁰ - 10 ⁰⁰	night rest

RESEARCH TASKS

1. Extinction Coefficients

Task: To determine the extinction coefficients of 1th and 2nd order. Compare the results from different nights.

Description: Use the CCD data collected by other researchers in the astrocamp or use archival data of the observatory. Researcher of this task don't need to make his own observations during the night. Therefore may be available to researchers who collects visual observations.

2. Transformation Coefficients

Task: To acquire several points on light curves of semiregular and symbiotic variable stars included in the observing program MEDÚZA in different photometric filters. Transform the CCD measurements into the standard photometric system using previously determined transformation coefficients.

Description: First determine the transformation coefficients of your instrument. Use the suitable standard open cluster on summer sky. IC 4665 is recommended. You need measurements in the field with good absolute photometry available. Then make your own observations of selected objects and transform data to the standard system. Make one point every night in all filters (B, V, Rc, Ic).

Recommended targets: YY Her, RS Oph, BF Cyg, CI Cyg, CH Cyg, V1329 Cyg, R CrB, T CrB, HZ Her, Z UMi, AG Dra, Z And, WY And, BX Cas, ST Cas, KS Cas, V365 Cas, UY Cas, NSV 6696, V927 Cyg, V482 Cyg, V840 Cyg, V1742 Cyg, V2037 Cyg, V1805 Cyg, V539 Cyg, TZ Cep, SY Cam.

3. Semiregular and Symbiotic variable stars

Task: To acquire several points on light curves of "MEDÚZA stars" visually. Construct the light curves using your own and archival data. Include also results from research task No 2 to evaluate the quality of visual observations.

Description: Perform visual estimates of selected objects using Nijland-Blazhko method during all the astrocamp. For every object – one estimate per night. In addition to normal light curves try to construct folded light curves with periods from catalogs. The period can be unstable in the case of semiregular variables. Show the results of period analysis in that case.

Recommended targets: YY Her, RS Oph, BF Cyg, CI Cyg, CH Cyg, V1329 Cyg, R CrB, T CrB, HZ Her, Z UMi, AG Dra, Z And, WY And, BX Cas, ST Cas, KS Cas, V365 Cas, UY Cas, NSV 6696, V927 Cyg, V482 Cyg, V840 Cyg, V1742 Cyg, V2037 Cyg, V1805 Cyg, V539 Cyg, TZ Cep, SY Cam.

4. O-C diagrams of eclipsing binaries

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. Make the observations with CCD camera and simultaneously organize visual observations by astrocamp participants. Compare the accuracy of the time of minima determined by both methods (CCD and visual observations).

Description: Determine CCD time of minima using Kwee & van Woerden method (software AVE) and fitting tool implemented on var.astro.cz as well. Use Kordylewski method (software Protokoly) for visual observations. Select suitable observing targets for the given night using program "POZOR" or "Predpovedi".

Recommended targets: SW Lac, SV Cam, RT And, U Peg, AB And, TY Boo, DI Peg

5. O-C diagrams of Intermediate Polars

Task: To construct the O-C diagram of pulse maxima connected with white dwarf rotation in the intermediate polar system. Use the data from literature and at least one personal CCD observation.

Description: Intermediate polars has asynchronous rotation. On the light curve we can see the orbital motion and spin of the primary component as well. The spin period has typically 10 - 20 minutes. So we need long observing run lasting several hours with good time resolution (max. ¼ of the spin period). One filter is sufficient. We have to subtract the orbital wave mathematically. The corresponding point in the O-C diagram you get after fitting the measured points with sinusoidal fit. All necessary mathematical operations can be done with the program "MCV".

Recommended targets: FO Aqr, AO PSc

6. Superhumps

Task: To 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.

Description: 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.

Recommended target: To be determined ad hoc.

7. Cepheids

Task: To construct the folded light curves of several bright and well known cepheids based on personal visual observations. Compare your own measurements with photoelectric folded light curves from literature. Using your observations estimate the distance to observed cepheids. Compare it to the published values.

Description: The typical period of cepheid pulsation is several days. Hence you need 2 or 3 estimates per night during all the astrocamp. Use not only your own measurements but also the estimates of the other participants. The distance can be estimated using available methods.

Recommended targets: Delta Cep, Eta Aql, SU Cyg, U Aql

8. The accuracy of visual observations

Task: To perform visual observations of constant stars using given comparison stars. Evaluate the measurements statistically.

Description: The supervisor will give out special charts just before the start of observations. This way we want to avoid the possibility to find the correct value of constant star magnitude from a catalog. The statistic evaluation means determination of standard deviation for each observer, its dependency on star brightness and color. Use not only your own measurements but also the estimates of the other participants.