

Pro-Am collaboration in stellar astrophysics „Made in Czech Republic“

Miloslav Zejda



**Department of Theoretical Physics and Astrophysics,
Masaryk University, Brno, Czech Republic**

Some historical fragments from two last centuries

Vojtěch Šafařík (1829-1902) – excellent variable star observer (about 20 000 visual estimates) – prof. of chemistry

1918 – establishing of the Czech Astronomical Society (CAS)

1924 – Bohumil Hacar (prof. of math, astronomy) – first president of Variable Star Section of CAS

1930 - Zdeněk Kopal – 17 year old student - president of VSS

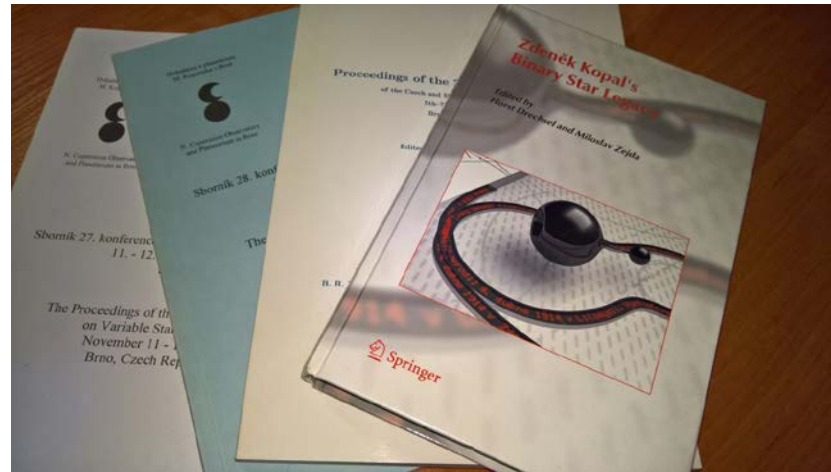
1960 – Oto Obůrka – prof. of math, founder and director of Brno public observatory and planetarium – re-establishing of VSS

new observational program for youth – short periodic variables, EBs => beginning of the great tradition of mainly amateur variable star astronomy in CZ

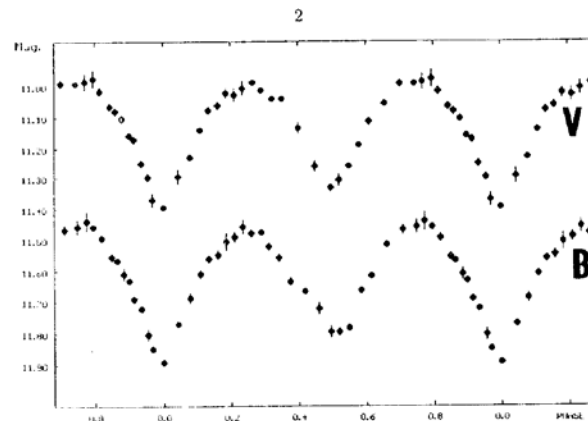
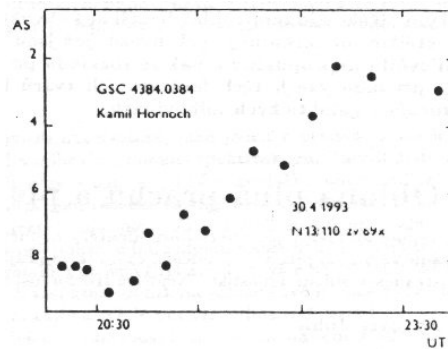
in the observational program – more than 1000 observers, mainly students who were taught how to obtain, process and publish data – future scientists, teachers, ... - *the first example Pro-Am collaboration*

1990's – VSS broadened the activities and show usefulness of amateur work for professional

- VSS started to organise international conferences for stellar and variable star astronomers



- Discovery of new variables – e.g. ES UMA – recommended as comparison in world wide campaign of SN1993J (IAUC 5775)

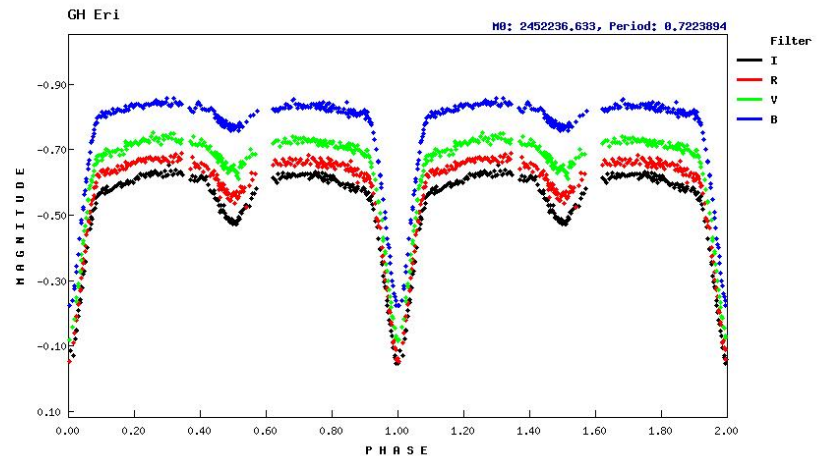
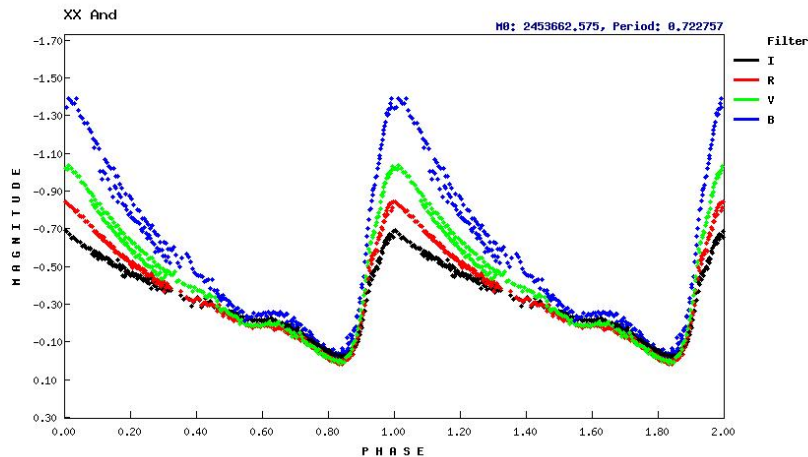


- New programmes – not only EBs ... - SR, Mira type, exoplanets ...

21st century – CCD become widely available for amateurs – any **knowledgeable** amateur can offer data on the same quality than professional observatories

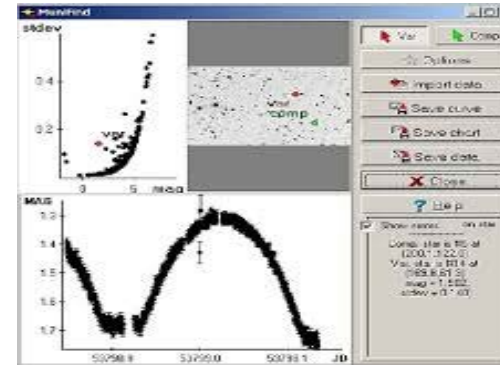
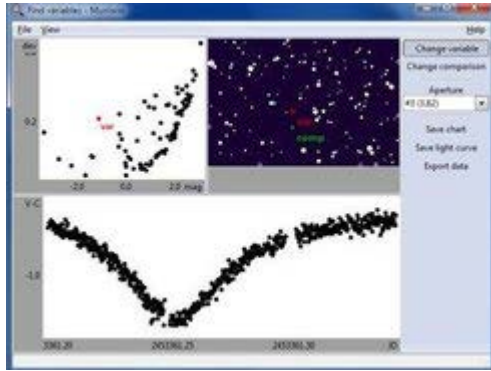
– advantage - no application for observational time

- possible long-time monitoring of objects
- possible campaigns
- upon requests observations

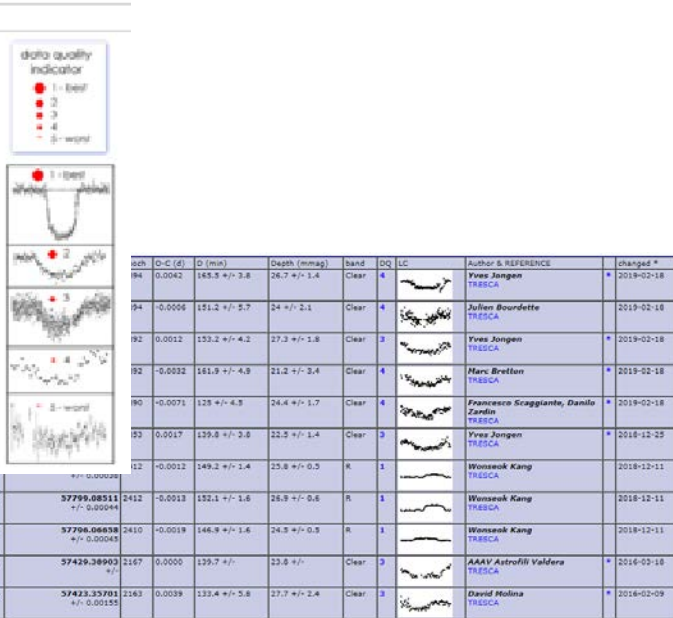
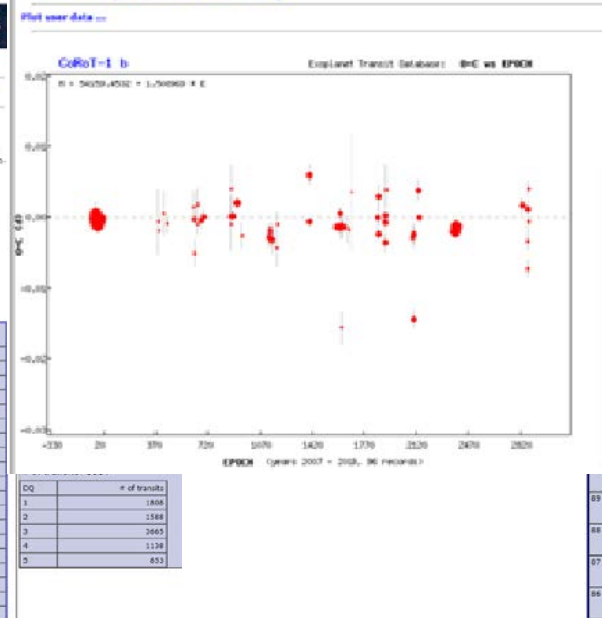
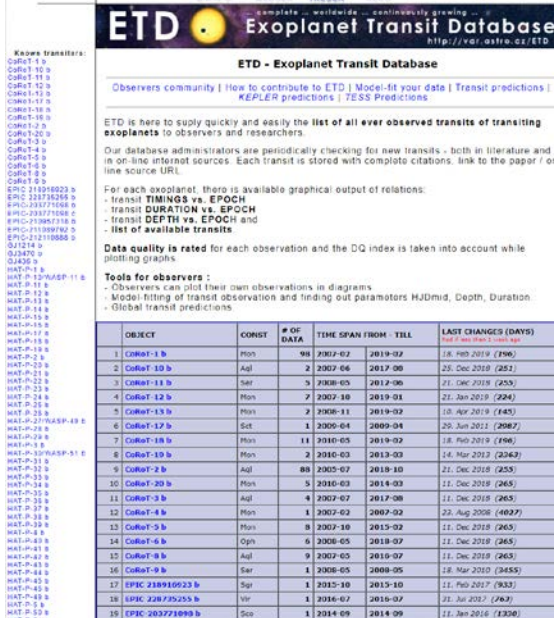
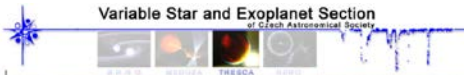
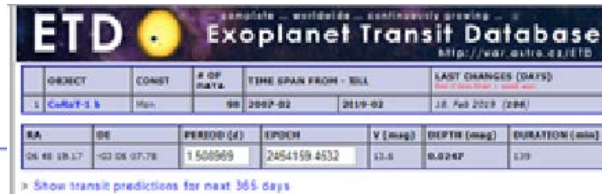


Necessary interaction Pro-Am – not only requests for data, also training!

- developments of tools for observers – e.g. C-Munipack for aperture photometry



- web service, databases – e.g. Exoplanet Transit Database



- journal – OEJV – more important after the end of IBVS



ISSN: 1801-5964

OPEN EUROPEAN JOURNAL ON VARIABLE STARS

<http://var.astro.cz/oejv>



- [News / Announcements](#)
- [Introduction](#)
- **[OEJV Publications](#)**
- [Search...](#)
- [OEJV Editorial board](#)
- [Contact](#)
- [Upload your publication](#)



- [Editors](#)

Welcome to the **Open European Journal on Variable stars!**

Fulltext :

The *Open European Journal on Variable Stars*, alias OEJV is an **on-line electronic journal** for results, analysis and studies of Variable Stars. Since August 2006, OEJV has recruited an international [editorial board](#). Each paper is read by the editors who then vote to accept or reject submitted papers.

All OEJV publications are included in [Smithsonian/NASA ADS](#) (Astrophysics Data System) and [Simbad database](#).

Here you will find tables with extreme ranges of brightness for a variety of variables, times of minima of Eclipsing Binaries and times of maxima of pulsating stars. Results obtained from **both visual and CCD's are accepted**. The OEJV is open to anyone who wishes to publish their observations or results of research.

OEJV is supported by the [Variable Star Section of Czech Astronomical Society](#).

Dr. Marek Skarka, technical editor
Ladislav Smelcer, president of VSES

Astronomical amateur – astronomical professional

Astronomical professionals & amateurs – IT amateurs & professionals

IT students – bachelor, diploma thesis for astronomical praxis – the best ones continue as professionals

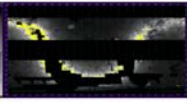
Mirror of SWASP DR1 - <https://wasp.cerit-sc.cz>

SuperWASP

Wide Angle Search for Planets (Wikipedia, Home page) database contains 17,960,328 objects.
Hosted by CERIT Scientific Cloud, Institute of Computer Science, on behalf of Department of Theoretical Physics and Astrophysics, Faculty of Science, Masaryk University, Brno, Czech Republic

Position:
Object ID: (name for Sesame name resolver)
or
R.A.: (0.0-360.0 arc degree or 00:00:00.0-24:00:00.0 hours)
Declination: (-90.0 to +90.0 arc degree or [+/-]dd:mm:ss.sss arc degree)

Filter objects:
Radius: deg
Magnitude range: < V <
Only nearest objects.
Only objects with at least points



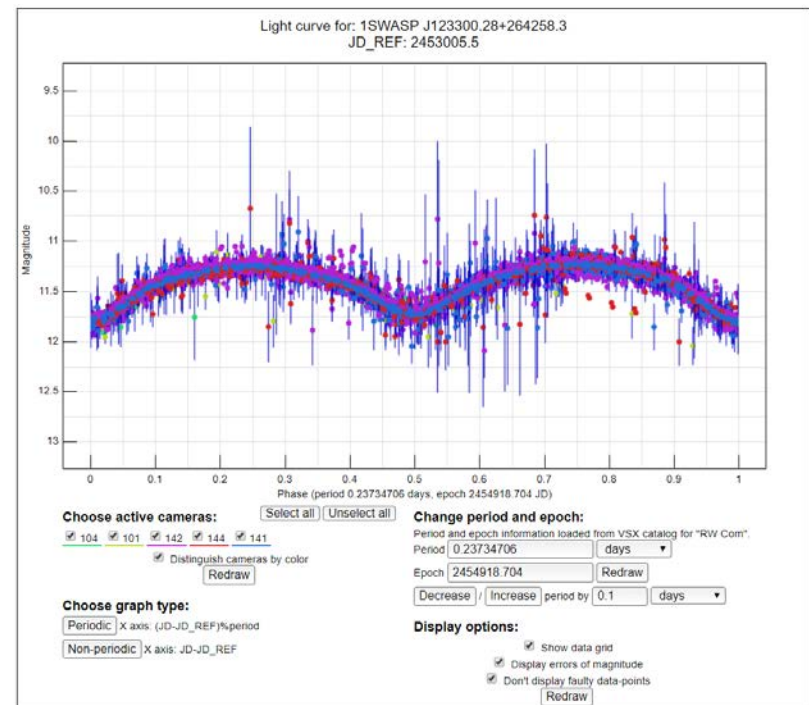
(click to enlarge map)

Contact: support@cerit-sc.cz

WASP Data Acknowledgement

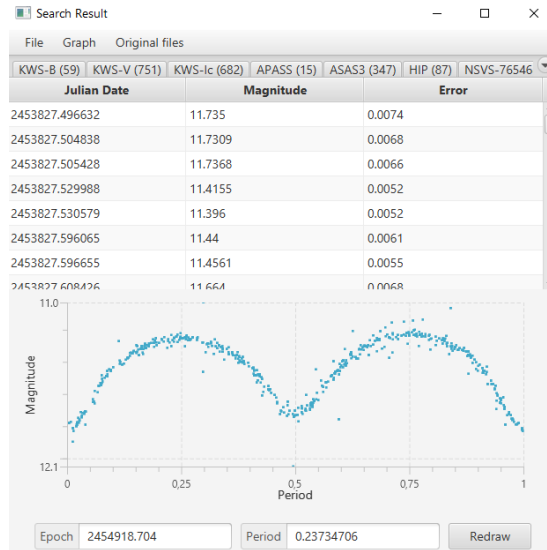
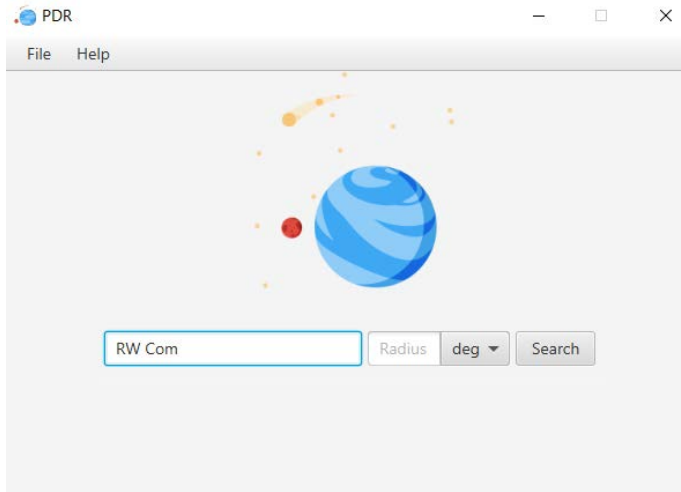
If you make use of data from this archive, please include the following acknowledgement:

This paper makes use of data from the DR1 of the WASP data (Butters et al. 2010) as provided by the WASP consortium, and the computing and storage facilities at the CERIT Scientific Cloud, reg. no. CZ.1.05/3.2.00/08.0144 which is operated by Masaryk University, Czech Republic.



Photometric Data Retriever (PDR)

<https://github.com/m-krajcovic/photometric-data-retriever>



Choose one stellar object

Simbad (18) VSX (1)

Distance	Name	Right Ascension	Declination
0.00	V* RW Com	12 33 00.28419587...	+26 42 58.362399221
2.71	Cl* Melotte 111 AV ...	12 33 11.35178137...	+26 44 05.718840966
3.02	Cl* Melotte 111 AV ...	12 33 06.58091783...	+26 45 39.077616660
4.69	2MASX J12331223+...	12 33 12.20461832...	+26 39 06.572278659
4.97	SDSS J123258.25+2...	12 32 58.24759183...	+26 38 01.641218442
5.39	Cl* Melotte 111 AV ...	12 33 24.40363314...	+26 42 46.278120687
5.49	NGP9 F322-1755919	12 32 57.45	+26 48 25.9
5.57	SDSSCG 67805.4	12 32 48.074	+26 38 07.18
5.60	GSC 01991-01657	12 33 03.94742569...	+26 37 25.941575947
5.64	SDSSCG 67805.2	12 32 46.804	+26 38 12.49
5.78	NGP9 F322-1823084	12 33 04.63	+26 37 16.7

Cancel Select



Archive of Measurements of PERiodic variable stars



<http://amper.physics.muni.cz>

SIGN IN

Keep me signed in

[Sign in](#) [Forgot password?](#) | [Registration](#) | [Documentation](#) | [Contact](#)

AMPER
Observations ▾ Users Projects ▾ Objects Constellations Docs
Admin My account ▾

Observations

▼ Observation Filter

Object

User

Project

Order

Photometric filter

Photometric system

Measured before

Measured after

[Apply filter](#)

[Clear filter](#)

▶ Object Visibility

▶ Phase Curve

▶ Other options

Showing 8 of 8 results

Load more:

#	Object	User Project	Filter System	Measurement start Added	Note Device	Vertical shift
448	CO Lac	Reinhold Friedrich Auer	b Instrumental	04. 07. 2015 20:18 21. 07. 2015	SMO NWT 300/1410 + G2-1600-5x	
445	CO Lac	Reinhold Friedrich Auer	v Instrumental	04. 07. 2015 20:17 21. 07. 2015	SMO NWT 300/1410 + G2-1600-5x	
446	CO Lac	Reinhold Friedrich Auer	r Instrumental	04. 07. 2015 20:16 21. 07. 2015	SMO NWT 300/1410 + G2-1600-5x	
447	CO Lac	Reinhold Friedrich Auer	i Instrumental	04. 07. 2015 20:15 21. 07. 2015	SMO NWT 300/1410 + G2-1600-5x	
9684	CO Lac	Miloslav Zejda Lacerta	B Instrumental	20. 06. 2015 23:06 22. 09. 2017	MUO Newton 600/2780 + G2-4000	<input type="text" value="0.00"/>
9685	CO Lac	Miloslav Zejda Lacerta	V Instrumental	20. 06. 2015 23:05 22. 09. 2017	MUO Newton 600/2780 + G2-4000	<input type="text" value="0.00"/>
174	CO Lac	Miloslav Zejda Lacerta	R Instrumental	20. 06. 2015 23:04 06. 07. 2015	MUO Newton 600/2780 + G2-4000	<input type="text" value="0.00"/>
9686	CO Lac	Miloslav Zejda Lacerta	I Instrumental	20. 06. 2015 23:04 22. 09. 2017	MUO Newton 600/2780 + G2-4000	<input type="text" value="0.00"/>

Load more:

#26816

Author: Miloslav Zejda
 Object: V1179 Cas
 Project: Assign to project
 Measurement start: 27. 08. 2019 18:23 UT
 Added: 28. 08. 2019 14:21

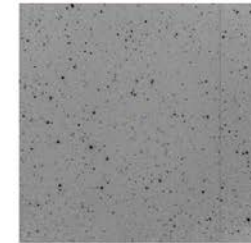
Details

Julian Date Format: Heliocentric
 Photometric filter: X
 Photometric system: Instrumental
 Measuring device: MUO | Newton 600/2780 + G2-16000
 Visible to: Only you

Options

- Upgrade to new version
- Reconnect data file
- Device observation

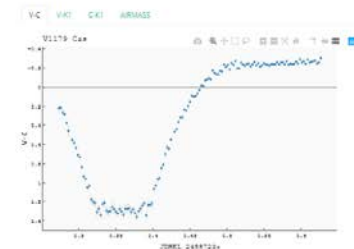
Chart



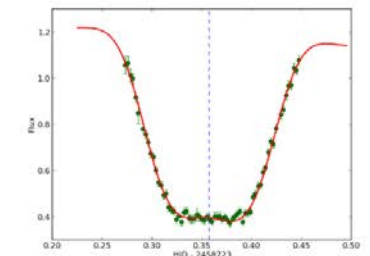
Data

[View raw data](#)

Graphs



Fit minimum



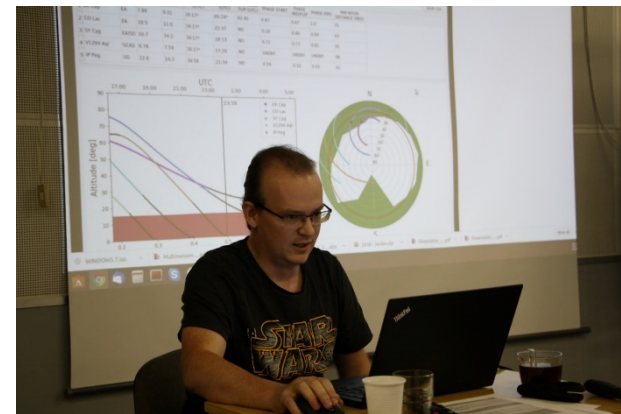
Time of minimum: 2458723.9572
 Error: 0.00220305291268

Eclipse start (jd): 2458723.97
 Eclipse stop (jd): 2458723.40
 Ephemeris: 2451488.714 + 0.0059

Use only this observation for calculations =

Pro-Am collaboration in the Czech Republic

- could be more intensive, however it is working!
- could be an inspiration for others
- it is **mutually** advantageous
- just do it!



RNAAS RESEARCH NOTES OF THE AAS

Discovery of a New Possible Quadruple Star Consisting of Two Eclipsing Binaries with Periods Close to a 3:2 Ratio

Pavel Cagaš^{1,2}

Published 2019 June 10 • © 2019. The American Astronomical Society. All rights reserved.
[Research Notes of the AAS, Volume 3, Number 6](#)

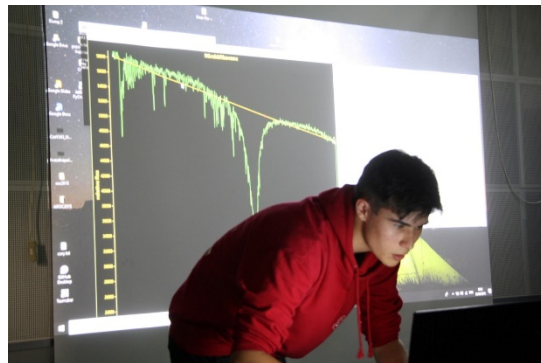
Figures ▾ References ▾

+ Article information

Export citation and abstract

BibTeX

RIS



V348 AND, AND V572 PER: BRIGHT TRIPLE SYSTEMS WITH ECCENTRIC ECLIPSING BINARIES

P. ZASCHÉ¹, R. UHLÁŘ², P. SVOBODA³, J. JURVŠEK⁴, D. KORČÁKOVÁ¹, M. WOLF¹, M. ŠLECHTA⁵, L. KOTKOVÁ⁵

¹ Astronomical Institute, Charles University, Faculty of Mathematics and Physics, CZ-180 00, Praha 8, V Holešovičkách 2, Czech Republic,
² Private Observatory, Pohoří 71, CZ-254 01 Jilové u Prahy, Czech Republic

³ Private Observatory, Výpustky 5, CZ-614 00, Brno, Czech Republic

⁴ Institute of Physics, The Czech Academy of Sciences, Na Slovance 1999/2, CZ-182 21, Praha, Czech Republic

⁵ Astronomical Institute, The Czech Academy of Sciences, CZ-251 65, Ondřejov, Czech Republic

(Dated: Received 2019 April 2; revised 2019 June 3; accepted 2019 June 25; published 2019 August 2)
Draft version August 15, 2019

ABSTRACT

The eclipsing binaries are still important objects for our understanding of the Universe. Especially these ones located within the more complex multiple systems can help us solving the problem of their origin and subsequent evolution of these higher-order multiples. Photometry and spectroscopy spanning over more than 25 years were used for the first complete analysis of the two bright triple systems, namely V348 And and V572 Per. The light curves in photometric filters were combined together with the radial velocities and analysed simultaneously, yielding the precise physical parameters of the galilean components of these multiple systems. The

OPEN EUROPEAN JOURNAL ON VARIABLE
 September 2017 <http://var.astro.cz/oejv>

CZEVA – THE CZECH VARIABLE STA

SKARKA, M.^{1,2}, MAŠEK, M.^{2,3}, BRÁT, L.^{2,4}, CAGAŠ, PA.^{2,5}, JUZEJDA, M.^{2,7}, ŠMELCER, L.^{2,41}, JELÍNEK, M.⁸, LOMOZ, F.^{2,9}, PEJCHA, O.^{2,11}, PINTR, P.^{2,12}, LEHKÝ, M.^{2,13}, JANÍK, J.⁷, ČERMOTL, D.¹⁷, WALTER, F.^{2,18}, ZASCHÉ, P.⁶, KOSS, K.³⁸, HÁJEK, F. KUČÁKOVÁ, H.^{2,6,8,22,26}, BODNÁR, F.²³, BERÁNEK, J.²³, ŠAFÁŘ PINTR, M.¹², SOBOTKA, P.², DŘEVĚNÝ, R.^{2,24}, JURÁNOVÁ ONDERKOVÁ, K.²⁶, SMOLKA, M.^{2,27}, AUER, R. F.^{2,28}, KOCIÁN GREŠ, A.³¹, MÜLLER, D.³², ČAPKOVÁ, H.¹³, KYSELÝ, J.³³ TIMKO, L.³⁴, BROŽ, M.⁶, BÍLEK, M.^{6,8}, ŠEBELA, P.³⁵, SEVČEK, I.¹³ PRAVEC, P.⁸, MRŇÁK, P.¹³, SVOBODA, P.³⁷, IPODDANÝ, S.^{2,18}, PRUDIL, Z.^{2,40}, KUCHŤÁK

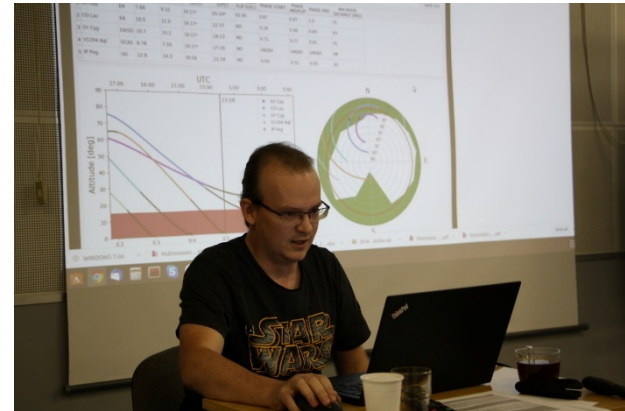
Private Observatory, MTA CSFK, Konkoly Thege M. u.
marek.skarka@mta.csfk.hu
 Variable Star and Exoplanet Section of the Czech Astronomical Society,
 CZ-757 01 Valašské Meziříčí, Czech Republic



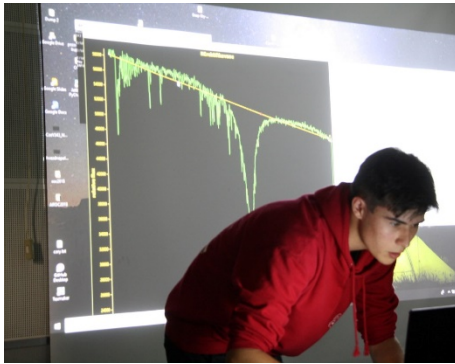
detach
 covere

Pro-Am collaboration in the Czech Republic

- could be more intensive, however it is working!
- could be an inspiration for others
- it is **mutually** ad
- just do it!



**Thanks
for your
attention!**



SEARCH NOTES OF THE AAS

a New Possible Quadruple Star Consisting of
Binaries with Periods Close to a 3:2 Ratio

© 2019, The American Astronomical Society. All rights reserved.
S, Volume 3, Number 6

BibTeX RIS



V348 AND, AND V572 PER: BRIGHT TRIPLE SYSTEMS WITH ECCENTRIC ECLIPSING BINARIES

P. ZASCHÉ¹, R. UHLÁŘ², P. SVOBODA³, J. JURVŠEK⁴, D. KORČÁKOVÁ¹, M. WOLF¹, M. ŠLECHTA⁵, L. KOTKOVÁ⁵

¹ Astronomical Institute, Charles University, Faculty of Mathematics and Physics, CZ-180 00, Praha 8, V Holešovičkách 2, Czech Republic,

² Private Observatory, Pohoří 711, CZ-254 01 Jilové u Prahy, Czech Republic

³ Private Observatory, Výpustky 5, CZ-614 00, Brno, Czech Republic

⁴ Institute of Physics, The Czech Academy of Sciences, Na Slovance 1999/2, CZ-182 21, Praha, Czech Republic

⁵ Astronomical Institute, The Czech Academy of Sciences, CZ-251 65, Ondřejov, Czech Republic

(Dated: Received 2019 April 2; revised 2019 June 3; accepted 2019 June 25; published 2019 August 2)
Draft version August 15, 2019

ABSTRACT

The eclipsing binaries are still important objects for our understanding of the Universe. Especially these ones located within the more complex multiple systems can help us solving the problem of their origin and subsequent evolution of these higher-order multiples. Photometry and spectroscopy spanning over more than 25 years were used for the first complete analysis of the two bright triple systems, namely V348 And and V572 Per. The light curves in photometric filters were combined together with the radial velocities and analysed simultaneously, yielding the missing orbital parameters of the galilean components of these multiple systems. The

PODDANÝ, S.^{2,18}, PRUDIL, Z.^{2,40}, KUČTĚK

Private Observatory, MTA CSFK, Konkoly Thege M. u.
marek.skarka@mta.csfk.hu

Variable Star and Exoplanet Section of the Czech Astro
CZ-757 01 Valašské Meziříčí, Czech

