



VSS director Mark attended a CSIRO Parkes Observatory open day where one of the many highlights was a screening of the movie “The Dish” under the big dish itself. As you can see it was a very popular event with hundreds of people attending.

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From the Director – *Mark Blackford*

Welcome to this third VSS Newsletter for 2019, I hope you find the articles informative and interesting. However, this is a rather slimmer edition than normal; we need more content so please consider making a contributing to our next Newsletter.

Unfortunately I couldn't attend the May 2019 RASNZ Conference in New Plymouth as I was holidaying in Europe at the time. By all accounts it was an excellent meeting. The program included at least three presentations for those interested in variable stars. Congratulations to John Drummond who was made a fellow of the RASNZ at the Annual General Meeting.



The next RASNZ conference will be 8-10 May 2020 in Wellington, just one month after the NACAA meeting and VSS Symposium in Parkes. Start making plans to attend one, or preferably both, of these events. More about the VSS Symposium in the next Newsletter.

Speaking of Parkes, I recently attended the CSIRO Parkes Observatory open days commemorating the 50th anniversary of Apollo 11's lunar landing. The highlights for me were the guided tour of the 64m radio telescope, excellent talks on various space missions (including Apollo 11 and Voyager 2), the Square Kilometre Array, Pulsars and Fast Radio Bursts, and the presentation by Australian astronaut Dr Andy Thomas. The event attracted several thousand people over the two days, including a few hundred for the Saturday evening open air screening of "The Dish" underneath the iconic radio telescope. Jupiter, Saturn and the Milky Way put on a grand display in a cloudless sky. As the movie was ending a bright meteor streaked across the eastern sky and the moon rose above the distant hill – the timing couldn't have been more perfect. It was a most enjoyable weekend.

Between 1989 and 2014 Mati Morel conducted a service called 'Variable Star Memorandum' to assist observers of novae, and a few other transients such as bright SNe. This was a rapid alert system to provide preliminary charts and sequences before things found a regular footing via AAVSO and other internet sources. Mati produced 236 VSM's which he recently scanned and combined into five PDF volumes that David O'Driscoll has made available on the VSS website for anyone who might be interested (<https://www.variablestarssouth.org/vss-community/variable-star-memorandum/>). Mati notes, however, that the VSMs were often put out very quickly, as preliminary messages, so should not be taken as the final word. Also, novae and SNe are ephemeral events and cease to be of much interest after they have faded, usually. The most authoritative results will be found elsewhere.

Meanwhile back at Congarinni Observatory the last 3 months were fairly lean observing wise. Six weeks overseas coupled with poor weather and equipment problems severely limited the number of nights that I was able to image. This quarter has started well, however, with many clear nights and more reliable equipment.

Wishing you all clear skies,

Mark Blackford

Abstract

Through the use of digitized archival images, five transients (four novae and one SN) in the LMC region, up to 1951, have been identified. Charts and positions, relative to Gaia DR2, are published.

Introduction

Five LMC novae were reported as such between 1926 and 1951. These are:

- Nova 1926 LMC = HV 4004 =RY Dor (Luyten 1927)
- N 1935 LMC = HV 11970 (Boyce 1942) = SN 1935C- NGC 1511 (van den Bergh 1988).
- Nova 1936 LMC = HV 7862 (Shapley 1940)
- Nova 1948 LMC = HV 12331 (Henize et al 1954)
- Nova 1951 LMC (Henize et al 1954)

Source material

Direct images exist on Harvard archival plates for all programme objects. Digitized images for all plates were downloaded from the *DASCH* server. The quality varied however, and in the case of N 1935 = SN 1935C the digitized image was simply not useable. I have resorted to one by van den Bergh (1988).

Reference stars

For each star in the list, I compiled about 8 to 10 field stars in the vicinity. Their precise positions were taken from Gaia DR2 (CDS cat I/345), noting the proper motion values. The pm values enabled me to determine the precise position of each reference star, at the respective epoch of each plate. With a net of reference stars I determined the exact orientation and scale of each DASCH plate. For most plates I could then rule a precise coordinate grid. It is always easier to measure the relative position of the target star relative to a grid line rather than a star image, which may be swollen or pixellated due to magnification. Systematic errors in ruling the grid were also determined and taken into account. Usually a mm-rule and a magnifying glass were sufficiently accurate, but I had at my disposal a clear graduated scale, with each millimetre divided into quarters. This was used a couple of times, but proved to be cumbersome.

Results

RY Dor

Plates **A14093** (1926-10-14) Exp. 60min. One measure only, due to thick ink line..

A14106 (1926-11-04) Exp. 68min. Clean. 4 measures. See **Figure 1 overleaf**.

All measures referred to Gaia DR2 (pm adjusted). RA endfigs range 56.61-57.66. Decl. endfigs range from 02.0-08.4". The 2.0 value is more of an outlier; others fall between 5.8-8.4.

Mean position (Epoch 1926.83, J2000) : **05^h14^m57.09^s ±0.5 -66°50'05.8" ±1"**

N 1935 = HV 11970 = SN 1935C

Photo-chart: **MF21124** S. van den Bergh (1988). .

Two determination ; 03 59 48.75 -67 38 16.1 / 03 59 49.36 -67 38 16.9 **Fig. 2 overleaf**.

Mean position : (Epoch 1935.69 , J2000) **03^h59^m49.0^s ±0.4^s -67°38'16.5"±1"**

N 1936 = HV 7862

Plates **MF21472** (1936-02-25.79), exp. 45min. 1 measurement.

MF21487 (1936-02-28.79), exp. 45min. 5 measurements

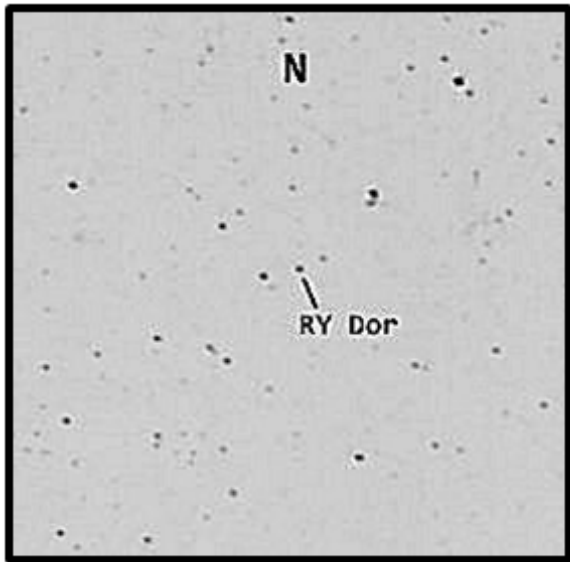


Figure 1. Chart for N 1926 = RY Dor. Extract from DASCH plate A14106

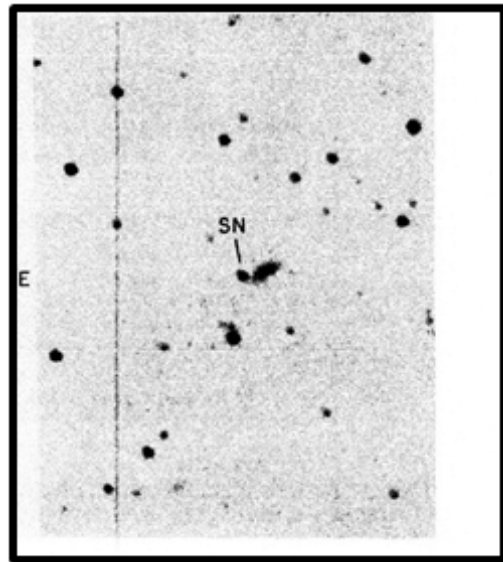


Figure 2. SN 1935C - NGC 1511. Chart is reproduced from van den Bergh (1988).

All measurements referred to Gaia DR2 (pm adjusted). RA endfigs range is 26.60 - 27.38^s. Decl. endfigs range is 24.0 - 26.5^{''}. mf21472 is very heavily annotated, and the identity is in no doubt. **Figure 3.**

Mean position : (Epoch 1936.16, J2000) : **05^h07^m27.07^s ±0.4^s -66°39'24.9" ±1"**

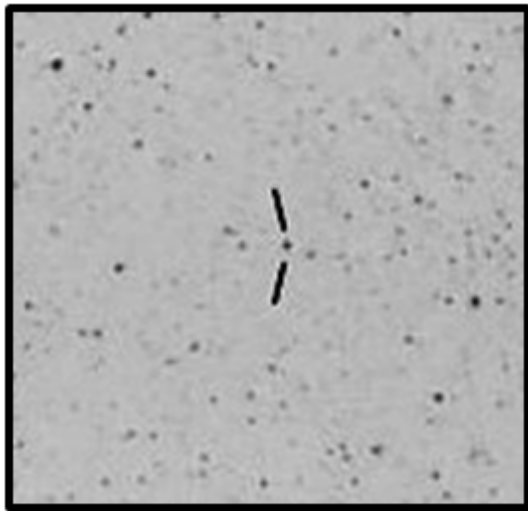


Figure 3. N 1936 LMC. DASCH plate. N at top

N 1948 = HV12331

Plate **A26711** (1949-02-15) exp. 60min. 6 measurements.

This plate is relatively poor, as pixellation becomes an issue when enlarged, and a few of the brighter stars have double images. The identity of the nova is in no doubt, as its magnitude (13.0B) is comparable with the M-supergiant WOH S 451 at the top of the field. There are no other 13^m stars in the vicinity. See **Figures 4A,4B**. Even under these circumstances, with 6 measurements, RA endfigs range is 11.06 - 12.13s, and Decl. range is 3.8 - 9.1^{''}. This yields the following result..

Mean position : (Epoch 1949.16, J2000) : **05^h38^m11.6^s ±0.4^s -70°21'07.0" ±2"**

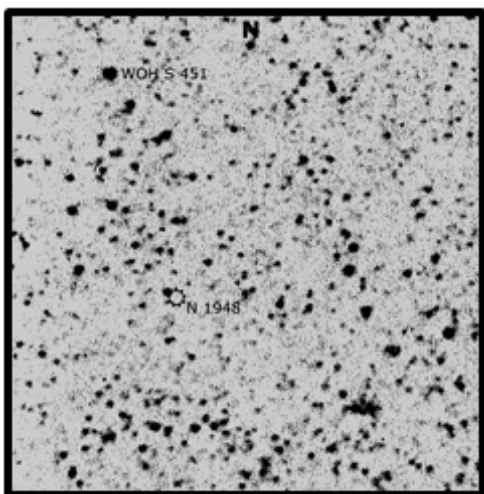


Figure 4A. *N 1948 LMC. Reproduced from Mt Stromlo plate, ~1960. N at top. Compare with DASCH plate, Fig. 4B*

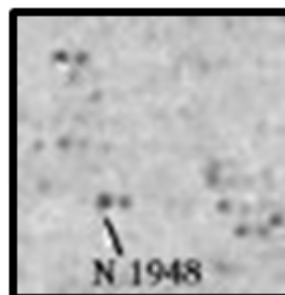


Figure 4B. *N 1948 LMC. Extract from DASCH plate A26711 (double exposed). Comp. Fig. 4A*

N 1951 LMC

Plate **MF39421** (1951-01-09), exp. 45min. 4 measurements.

Detected from its emission lines on a spectral survey plate (Henize 1954). No photo showing a direct image has been published. The DASCH plate identifies it. From my 4 measurements I find the RA endfigs range is 44.45 - 45.04; the Decl. endfigs range is 17.5 - 19.8. My mean result is referenced to Gaia DR2, pm-adjusted.

Mean position : (Epoch 1951.11, J2000) : **05^h12^m44.89^s ± 0.4^s -69°57'18.4" ± 2"**

My position is 73arcsec north of the position given by Subramaniam and Anupama (2002); they give no source - no reference to any archival chart or photo. To my knowledge no reliable finder chart has been published up till now. See **Figure 5**.

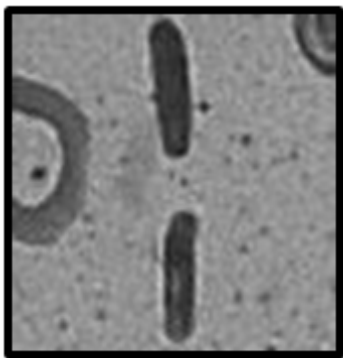


Figure 5. *N 1951 LMC. Extract from DASCH plate MF39421 (annotated). N at top*

It should be noted that my new position determination is rather close (within 2 arcsec) to the transient **ASASSN-17lo** (Stanek et al 2017), now classified as a CV. The position given by the ASASSN team is 05:12:45.09 -69:57:20.1 The VSX Team has identified one particular Gaia star (among several) as the counterpart, with end figures 44^s.95, 19.26' (G=19^m.225) for epoch 2015.5. The pm-adjusted position yields endfigures 44.939^s, 19.153" for epoch 1951.11, even closer to my position. There is no doubt that N 1951 LMC = ASASSN-17lo.

List of LMC novae by Subramaniam & Anupama (2002)

I have noted Table 1 of 30 nova positions as listed by S&A, including my five objects. Considering the

precise positions of old HV objects, one surmises they have been determined from the discovery plates, but there is **no** acknowledgement of this. My study shows that their stated positions are often in poor agreement with other work. The research conducted by S&A was to construct CMDs (colour-magnitude diagrams) of thousands of field stars from OGLE-II (and star clusters) around 15 LMC novae. [Their nova no. 2 is really SN 1935C in galaxy NGC 1511, v.d.Bergh 1988].

I believe that the nova positions given by S&A refer quite often to the *centroid* of the respective field which may, or may not, coincide with the position of the respective nova. It is not plausible that new positions were derived without consulting the old discovery plates. Treat positions with caution.

Table 1: Summary of New Positions for 5 LMC Novae.

No.	Name	(J2000)	Epoch	Remarks
1.	N 1926 = RY Dor	05 14 57.09 -66 50 05.8	1926.83	
2.	N 1935	03 59 49.0 -67 38 16.5	1935.69	SN 1935C
3.	N 1936	05 07 27.07 -66 39 24.9	1936.16	
4.	N 1948	05 38 11.6 -70 21 07.0	1949.16	
5.	N 1951	05 12 44.89 -69 57 18.4	1951.11	ASASSN-17lo, CV

Acknowledgement.

I gratefully acknowledge the use of DASCH plates in this research..

References.

- Boyce, E.H. 1943. Harvard Bulletin 917.
 DASCH (Digital Access to a Sky Century @ Harvard) <http://dasch.rc.fas.harvard.edu/project.php>
 Henize, K.G., Hoffleit, D. and Nail, V. McKibben 1954. Proc. Nat. Acad. Science 40, 365
 Luyten, W. 1927. Harvard Bulletin 847.
 Shapley, H. 1940. Harvard Bulletin 912.
 Stanek, K.Z. et al 2017. ATel #10701
 Subramaniam, A. and Anupama G.C. 2002. Astron. Astrophys. 390,449
 v. den Bergh, S. 1988. PASP 100,1542

Update on the Eta Car campaign: 2019+2021– *Mark Blackford*

(markgblackford@outlook.com)

This project was introduced in the previous VSS Newsletter. Since then I've continued to observe eta Car at every opportunity and Steve Kerr, observing from near Rockhampton, Qld, has joined the party. In the light curve in Figure 1 Steve's observations are shown in red and mine in blue. On those nights that we both observed our measurements were in excellent agreement.

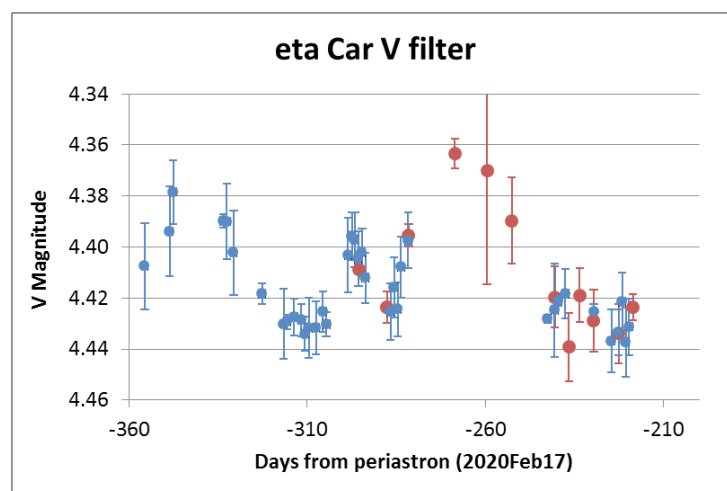


Figure 1. February 26th to July 13th 2019 light curve of eta Carinae by Steve Kerr (red circles) and Mark Blackford (blue circles).

Meanwhile, Dave Blane in South Africa has been submitting high quality DSLR TG observations to the AAVSO International Database. Dave's light curve, shown in Figure 2, closely follows the CCD light curve in Figure 1, but with a small offset of 0.03 magnitudes. Judging by the density of his observations Dave had a better run of weather than Steve or I over the last few months.

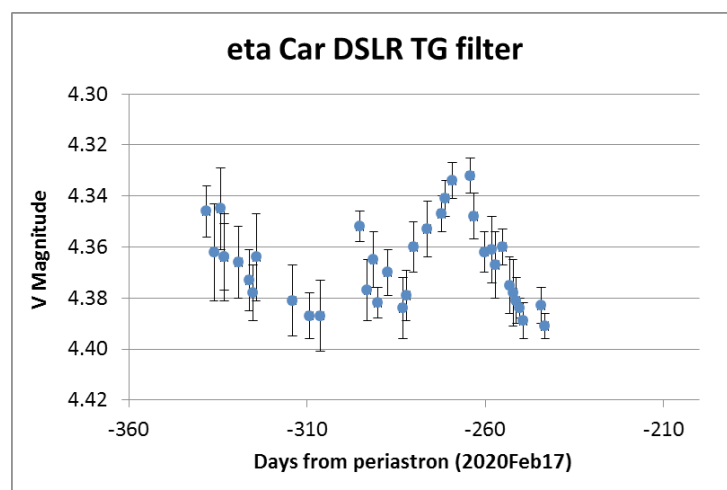


Figure 2. DSLR TG light curve of eta Carinae by Dave Blane.

I'm now using a 33mm diameter aperture mask to allow individual exposures of 3 or 4 seconds, instead of 1 to 2 seconds with the 50mm aperture mask. This has significantly reduced the number of images affected by scintillation.

If you wish to participate in the project please contact the author and visit the project webpage: <https://www.variablestarssouth.org/eta-carinae-photometric-campaign-20192021/>.

Introduction

MuniWin is an astrophotometric software package, available for Windows and Linux, and possibly other systems. While it is not currently the package we mainly use, we (John and Aline Homes) have installed it on our computers, to trial and see if it offers any advantages over our current package.

Installing it on the first machine took several hours of trial, error, and Internet searches, spread over a couple of weeks. Once we knew what was needed, and what pitfalls to avoid, installation on a second machine was done in half an hour. This article, then, is a summary of what was required, to assist anyone else interested in trying this software on Linux systems.

The Linux distro for these installs is Fedora 28. I would expect that the process would be much the same on any .rpm-based system. On a .deb-based system such as Ubuntu or Mint, installing prerequisite software from the repositories has different commands, and the package names may be different.

Most of what is needed must be done by shell commands through a terminal program. I assume a basic familiarity with the shell, and the common commands. Some of the actions will require root privileges, so the user logon must be defined as an administrator that can use the `sudo` command.

Prerequisites

Some of the prerequisite software, available from the Fedora repositories, is not installed by default. It is not always possible to locate the missing packages from the Gnome Software GUI. Instead, the packages must be installed using the shell.

Note that if an attempt is made to install a package which is already installed, the installer will simply report that there is nothing for it to do.

The installer will list any additional packages needed by the ones you have requested.

C++ compiler

This is needed to compile the MuniWin program.

```
sudo dnf install gcc-c++
```

After listing all needed packages, and giving an estimate of the download size, the installer will ask if you want to proceed. Reply “y”. This is *not* the default.

Expat library

This contains routines for parsing XML files. The standard package is probably already installed, but the developers’ package is also needed. The command below specifies both packages, to be on the safe side.

```
sudo dnf install expat expat-devel
```

Again reply “y” to the request.

GTK+ library

This contains routines for adding and updating various aspects of window displays. Several packages are needed.

```
sudo dnf install gtk+ gtk+-devel gtk+extra gtk+extra-devel
```

Again reply “y” to the request.

Combination

It will work just as well, and you may consider it easier, to issue one `sudo dnf install` command with all the packages listed above.

Building the software

There are three software packages that now have to be downloaded from three different websites, and built from source. Note that they must be done in the order given here, although it is possible to do all the downloads first, before going on to the builds.

Unlike most of what is needed, unpacking the downloaded files can be done from the File Manager GUI if you like, although as you must do everything else from the terminal, you might prefer to use the `tar` command.

cfitsio

Download this from <https://heasarc.gsfc.nasa.gov/fitsio/fitsio.html>

Unpack the files, and `cd` to the directory containing them.

These commands will build the routines.

```
./configure --prefix=/usr/local
make
sudo make install
```

Note the prefix is needed so that the installed routines are accessible to all users, which MuniWin expects. Otherwise they will be installed where only the installing user can find them, which does not work.

wcslib

Download this from <http://www.atnf.csiro.au/people/mcalabre/WCS/index.html>

Unpack the files, and `cd` to the directory containing them.

These commands will build the routines.

```
./configure
make
sudo make install
```

No extra parameters are required this time.

MuniWin

Download this from <https://sourceforge.net/projects/c-munipack/>

Unpack the files, and `cd` to the directory containing them.

These commands will build the program.

```
./configure --disable-sound
make
sudo make install
```

I do not know why MuniWin has a sound option, or why it defaults to on, but if it is not disabled then the build will look for some gstreamer modules that may not be present.

Using MuniWin

Building MuniWin this way, it is not added to the desktop list of applications. To start it, enter the command `muniwin` (Note all lower case) through a terminal. Having to start a terminal session every time you want to run it is a nuisance, so I would suggest setting up a keyboard shortcut to start it.

When it starts, most of the menu and toolbar entries will be missing. They will not appear until you create or open a project.

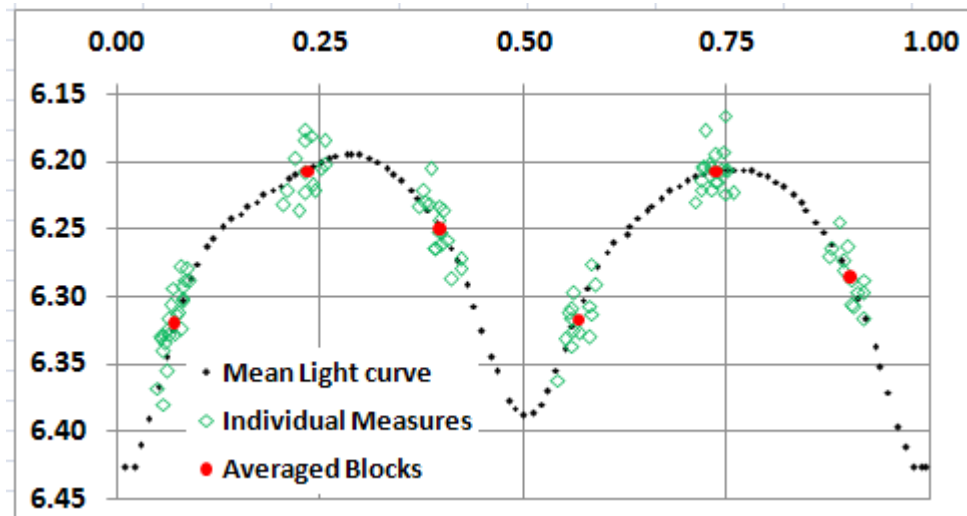
As of now, we have only just installed this software, and so do not have much experience of using it. Once we do, that can be the subject of another article.

QZ Carinae - unsubmitted measures required – *Stan Walker, Mark Blackford and Ed Budding*

astroman@xtra.co.nz

This project to update the O-C light time effect curve previously published as part of a paper in Monthly Notices of the Royal Astronomical Society in 2017 has now reached a stage where we would like to proceed with publishing the new results. Members have contributed some observations from 2017 to 2019 but in various emails have indicated that they have made others at times.

It appears that some measures have not been forwarded due to the scatter in the data. This scatter is expected for a number of reasons and, unlike some eclipsing binaries, the epochs of minimum are hard to determine accurately. In this particular stellar system where the light time effects are around 12 hours or more, a precision of 30 minutes is quite acceptable. Let's illustrate this with some measures from ASAS3 in 2006.



Here we have 101 measures over a period of more than six months with a scatter of ~ 0.08 or 80 millimag as shown by the open green diamonds. On first sight determining an epoch would be difficult and the result unreliable. But the frustrating period of 5.99857 days does have one advantage - it allows the measures to be grouped into six blocks separated by approximately one day. The dates and magnitudes are then averaged. This averaged data then forms the red circles which fit closely to the mean light curve from the BRITE satellite data. A reliable epoch has thus been determined.

So if you have any unsubmitted measures, either from earlier years, or this current one of 2019, could you please forward these on to us without delay. We plan to submit the paper, based on measures for the last three years and a much more accurate O-C curve of the light time effects during August.

One other positive step. The present programme involving eta Carinae encouraged a search of the old records of that star, amongst which we found over a hundred measures of QZ Carinae which have produced another six or seven epochs. The O-C curve up to 1984 is now very well covered and provides a much more accurate view of the long term period of the two pairs of stars making up this system.

Publication watch

Since the last newsletter the Southern Eclipsing Binaries Group headed by Tom Richards has published new data on 62 southern binary stars.

Richards, Tom, Blackford, Mark, Butterworth, Neil, Crawford, Greg, Jenkins, Robert. “*Southern Eclipsing Binary Minima and Light Elements in 2018*”, OEJV* 198. 2019OEJV..198....R

Abstract

We present 142 minima estimates of 62 southern eclipsing binaries obtained in 2018 by members of the Southern Eclipsing Binary group of Variable Stars South using DSLR and CCD detectors. Where sufficient minima estimates of a target are obtained, we report the light elements derived from those minima, together with O-C comparisons with light elements in the literature.

Roy Axelsen has had a paper published in JAAVSO on a new delta Scuti star.

Axelsen, R.A. *A New Candidate delta Scuti Star in Centaurus: HD 121191*. JAAVSO Vol 42 No 2 2019

Abstract

During a study of the δ Scuti star V1393 Centauri by digital single lens reflex photometry, it was found that two of the chosen comparison stars were variable. This paper reports the subsequent investigation of one of them, the class A star HD 121191, which revealed that it is a candidate δ Scuti star with a period of 0.046282 d and an amplitude of 0.048 magnitude in V.

Phil Evans has been named as a co-author in three exoplanet publications:

Rodriguez, Joseph E.; Eastman, Jason D.; Zhou, George and 75 more. *KELT-24b: A $5M_J$ Planet on a 5.6 day Well-Aligned Orbit around the Young $V=8.3$ F-star HD 93148*. 2019 arXiv190603276R

Abstract

We present the discovery of KELT-24 b, a massive hot Jupiter orbiting a bright ($V=8.3$ mag, $K=7.2$ mag) young F-star with a period of 5.6 days. The host star, KELT-24 (HD 93148), has a $T_{\text{eff}}=6508\pm49$ K, a mass of $M_* = 1.461\pm0.056\text{--}0.060 M_{\odot}$, radius of $R_* = 1.506\pm0.022 R_{\odot}$, and an age of $0.77\pm0.61\text{--}0.42$ Gyr. Its planetary companion (KELT-24 b) has a radius of $R_p = 1.272\pm0.021\text{--}0.022 R_J$, a mass of $M_p = 5.18\pm0.21\text{--}0.22 M_J$, and from Doppler tomographic observations, we find that the planet’s orbit is well-aligned to its host star’s projected spin axis ($\lambda = 2.6\pm5.1\text{--}3.6$). The young age estimated for KELT-24 suggests that it only recently started to evolve from the zero-age main sequence. KELT-24 is the brightest star known to host a transiting giant planet with a period between 5 and 10 days. Although the circularization timescale is much longer than the age of the system, we do not detect a large eccentricity or significant misalignment that is expected from dynamical migration. The brightness of its host star and its moderate surface gravity make KELT-24b an intriguing target for detailed atmospheric characterization through spectroscopic emission measurements since it would bridge the current literature results that have primarily focused on lower mass hot Jupiters and a few brown dwarfs.

Kossakowski, Diana; Espinoza, Néstor; Brahm, Rafael and 51 more. *TOI-150b and TOI-163b: two transiting hot Jupiters, one eccentric and one inflated, revealed by TESS near and at the edge of the JWST CVZ*. 2019 arXiv:1906.09866.

Abstract

We present the discovery of TYC9191-519-1b (TOI-150b, TIC 271893367) and HD271181b (TOI-163b, TIC 179317684), two hot Jupiters initially detected using 30-minute cadence Transiting Exoplanet Survey Satellite TESS photometry from Sector 1 and thoroughly characterized through follow-up photometry (CHAT, Hazelwood, LCO/CTIO, El Sauce, TRAPPIST-S), high-resolution spectroscopy

(FEROS, CORALIE) and speckle imaging (Gemini/DSSI), confirming the planetary nature of the two signals. A simultaneous joint fit of photometry and radial velocity using a new fitting package juliet reveals that TOI-150b is a $1.254 \pm 0.016 R_J$, massive ($2.61 + 0.19 - 0.12 M_J$) hot Jupiter in a 5.857-day orbit, while TOI-163b is an inflated ($R_p = 1.478 + 0.022 - 0.029 R_J$, $M_p = 1.219 \pm 0.11 M_J$) hot Jupiter on a $P = 4.231$ -day orbit; both planets orbit F-type stars. A particularly interesting result is that TOI-150b shows an eccentric orbit ($e = 0.262 + 0.045 - 0.037$), which is quite uncommon among hot Jupiters. We estimate that this is consistent, however, with the circularization timescale which is slightly larger than the age of the system. These two hot Jupiters are both prime candidates for further characterization --- in particular, both are excellent candidates for determining spin-orbit alignments via the Rossiter-McLaughlin (RM) effect and for characterizing atmospheric thermal structures using secondary eclipse observations considering they are both located closely to the James Webb Space Telescope (JWST) Continuous Viewing Zone (CVZ).

Dawson, Rebekah I.; Huang, Chelsea X.; Lissauer, Jack J. and 32 more. *TOI-216b and TOI-216c: Two warm, large exoplanets in or slightly wide of the 2:1 orbital resonance*. 2019 arXiv:1904.11852

Abstract

Warm, large exoplanets with 10-100 day orbital periods pose a major challenge to our understanding of how planetary systems form and evolve. Although high eccentricity tidal migration has been invoked to explain their proximity to their host stars, a handful reside in or near orbital resonance with nearby planets, suggesting a gentler history of in situ formation or disk migration. Here we confirm and characterize a pair of warm, large exoplanets discovered by the TESS Mission orbiting K-dwarf TOI-216. Our analysis includes additional transits and transit exclusion windows observed via ground-based follow-up. We find two families of solutions, one corresponding to a sub-Saturn-mass planet accompanied by a Neptune-mass planet and the other to a Jupiter in resonance with a sub-Saturn-mass planet. We prefer the second solution based on the orbital period ratio, the planet radii, the lower free eccentricities, and libration of the 2:1 resonant argument, but cannot rule out the first. The free eccentricities and mutual inclination are compatible with stirring by other, undetected planets in the system, particularly for the second solution. We discuss prospects for better constraints on the planets' properties and orbits through follow-up, including transits observed from the ground.

About

Variable Stars South is an international association of astronomers, mainly amateur, interested in re-searching the rich and under-explored myriad of southern variable stars.

Renamed from the Variable Star Section of the Royal Astronomical Society of New Zealand, it was founded in 1927 by the late Dr Frank Bateson, OBE, and became the recognised centre for Southern Hemisphere variable star research.

VSS covers many areas and techniques of variable star research, organised into projects such as Beginners' Visual Observations and Dual-Maxima Miras. The goal of each project is to obtain scientifically useful data and results. These may be published in recognised journals, or supplied to international specialist data collection organisations.

VSS is entirely an internet based organisation, working through our website <http://www.VariableStars-South.org> and its e-group <http://groups.google.com/group/vss-members>. It also encourages members to work in with major international organisations such as the British Astronomical Association, the Center for Backyard Astrophysics and the American Association for Variable Star Observers.

To find out more, please visit our website, where, incidentally, you will find PDF copies of all our newsletters. Our website has a great deal of information for VSS members, and for anyone interested in southern hemisphere variable star research. All VSS project information and data is kept here too.

Who's who

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Treasurer/Membership Bob Evans

Newsletter Editor Phil Evans

Webmaster David O'Driscoll

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Publication dates are January, April, July and October, nominally on the twentieth day of these months and the copy deadline is the thirteenth of the month though earlier would always be appreciated.

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