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Office: Burlington House, Piccadilly, London, W1V 9AG
V478 HERCULIS 17h 21m 05.6s +23°39'37" (2000)

CHART: A 12.5 F 14.6 BAA VSS
POSS: B 13.4 G 15.0 EPOCH: 2000
SEQUENCE: C 13.5 H 15.6 DRAWN: JT 14-07-01
A. HENDEN: D 14.1 K 16.0 APPROVED: RDP
E 14.3 L 16.8
FROM THE DIRECTOR

ROGER PICKARD

Campaign to Monitor SU UMa
My thanks to those observers who kindly submitted data on this Pro-Am project; namely Len Brundle, Paul Charleton, Michael Gainsford, Gary Poyner, John Toone and Margareta Westlund. See the excellent article by Darren Baskill on page 6 of this Circular to discover how those observations have been used.

IBVS 5099
The title of this IBVS was *Unusual Slow Fading of Standstill in AT Cnc* and the authors were listed as Taichi Kato, Rod Stubbings, Maciej Reszelski, Eddy Muyllaert, Mike Simonsen, GARY POYNER, Pavol A Dubovsky, Andrew Pearce, Timo Kinnunen, Hiroyuki Maehara.

30 May 2001

Congratulations to Gary Poyner on his work in observing this Z Cam-type dwarf nova.

VARIABLE STAR SECTION MEETING AT ALSTON HALL,
NEAR PRESTON, LANCASHIRE, OCTOBER 5-7, 2001
DENIS BUCZYNSKI AND ROGER PICKARD

Members are reminded that the Section will hold its 2001 meeting as a residential weekend at the above location.

Final Call for Poster Papers.
This will be an ideal opportunity to present poster papers of members work, whether you intend to be present or not. If you wish to submit a poster, but are unable to attend you may send it to either the Director, or Denis Buczynski, at any time up to the 1st of October 2001. Ideally the Posters should be A4 size and on stiff card. There will be a short session at the Meeting when the Papers will be formally presented and discussed.

Provisional Programme
About thirty VSS members have booked to date, and the programme is almost finalised. It is intended that there will be three strands to the meeting:

1) Technical talks by professionals currently researching various aspects of variable star astronomy. These will begin with a lecture by Allan Chapman on Friday evening after registration and will continue on the Saturday with Dr Maurizio Salaris, Dr Chris Lloyd, Professor Gordon Bromage and Dr Keith Robinson, culminating with a further lecture by Dr Allan Chapman on the Saturday evening.

2) There will be a series of workshop sessions on the Sunday, which will examine the variety of observational techniques which amateurs within the VSS employ. The workshop will
A number of changes have recently been made to the Recurrent Objects Programme. Six stars have been dropped, and ten have been added. Those stars which have been dropped are as follows...

3C 279, V635 Cas, V1008 Her, GK Per , UV Per , SW UMa,

One of the main aims of the programme is to raise the profile of certain objects, in order that they might receive increased coverage. This has been successfully achieved with those stars which have now been dropped from the programme. Our knowledge of these systems has increased greatly over the past few years.

V1008 Her is now an established UGSS star, whilst UV Per and SW UMa have well determined orbital periods following extensive observations of both normal and superoutbursts. GK Per, although meeting the ROP criteria for having a greater than one year outburst cycle, is
fairly predictable in its outburst frequency. **3C 279** (the most active of AGN) is a worthwhile object for future monitoring, but does not really fit in with other objects on the programme. Recent activity in this object has born this out. It is hoped that a new AGN programme will soon be drawn up along with our friends in the Deep Sky Section, where 3C 279 will be first on the list!

**V635 Cas** remains a most interesting object, both for the amateur and especially for the professional astronomer. Unfortunately its very small outburst amplitude (0.5-1.0mv) and general faintness (14.5-15.5mv), means that coverage of this star has never been high. However previous success in detecting optical outbursts accompanying X-ray activity has raised interest levels in this system from several overseas observers. Now excellent all year round coverage is maintained by a small group of experienced observers from the UK, Europe, Scandinavia and the USA. With this in mind, I have decided to remove **V635 Cas** from the programme to make way for something new, safe in the knowledge that close monitoring for those subtle pre and post X-ray outbursts would continue.

The stars which are to be added to the ROP are as follows (positions are for 2000.0).

<table>
<thead>
<tr>
<th>Star</th>
<th>RA</th>
<th>Dec</th>
<th>Magnitude</th>
<th>UGSU</th>
</tr>
</thead>
<tbody>
<tr>
<td>DK Cas</td>
<td>00 18 08</td>
<td>+57 26</td>
<td>14.8-19.5p</td>
<td>UGSS</td>
</tr>
<tr>
<td>V336 Per</td>
<td>03 22 53</td>
<td>+41 37</td>
<td>14.3p-&lt;20.0p</td>
<td>UG</td>
</tr>
<tr>
<td>V701 Tau</td>
<td>03 44 01</td>
<td>+22 42</td>
<td>14.3V-&lt;21.0p</td>
<td>UGSU</td>
</tr>
<tr>
<td>V650 Ori</td>
<td>05 31 08</td>
<td>+09 45</td>
<td>15.5p-&lt;17.5p</td>
<td>UG</td>
</tr>
<tr>
<td>EUVEJ0854+390</td>
<td>08 54 14</td>
<td>+39 05</td>
<td>?? ??</td>
<td>CV</td>
</tr>
<tr>
<td>CP Dra</td>
<td>10 15 40</td>
<td>+73 26</td>
<td>14.3v-20.0p</td>
<td>UGSU</td>
</tr>
<tr>
<td>KV Dra</td>
<td>14 50 38</td>
<td>+64 03</td>
<td>14.4C-?</td>
<td>UGSU</td>
</tr>
<tr>
<td>V478 Her</td>
<td>17 21 05</td>
<td>+23 39</td>
<td>15.5C-?</td>
<td>UGSU</td>
</tr>
<tr>
<td>CI Aql</td>
<td>18 52 04</td>
<td>-01 28</td>
<td>8.7V-</td>
<td>NR</td>
</tr>
<tr>
<td>CG Dra</td>
<td>19 07 33</td>
<td>+52 58</td>
<td>15.0p-17.5p</td>
<td>UG</td>
</tr>
</tbody>
</table>

Very little is known about **V336 Per**, **V650 Ori**, EUVEJ0854+390 and **CG Dra**. The magnitude ranges given above are catalogued ranges only, and these systems may well exceed these limits during outburst.

**V701 Tau** has had only one previous outburst recorded in December 1995. Superhumps were recorded by observers at Ouda station, Japan, but clearly there is a need for further outburst detections to add to the data from the 1995 outburst. **DK Cas** also has one previous outburst on record in November 1999. The determination of the orbital period in this system remains a high priority. **CP Dra** (for new chart see inside cover) is a recognised UGSU star, established from data obtained from the February 2001 outburst. However the outburst interval remains unclear. This is also the case for **KV Dra** (formerly RXJ 1450+6403) whose UGSU status was identified by the May 2000 outburst by Vanmunster. **V478 Her** (for new chart see inside cover) was caught in outburst for the first time by Vanmunster in June; CCD photometry revealed superhumps, classifying the star as a new UGSU object. The outburst peaked at magnitude 15.5C, suggesting that it may be a little faint for the ROP. However, so little is known about the star that it is quite possible that subsequent outbursts could be brighter.

There is a new web site for the Recurrent Objects Programme. Details of the programme, and a selection of light curves can now be found at [http://members.aol.com/GaryPoyner/rop.html](http://members.aol.com/GaryPoyner/rop.html)
NEWS FROM THE SECTION SECRETARY

JOHN SAXTON

Readers will no doubt have noticed that there are no lightcurves inside the cover of the current circular. This is simply because I'm still learning how to use the database!

I received the database on CD-ROM from Dave McAdam at the end of May, and I am presently in the midst of writing my own software to handle it. Very briefly, the database consists of large numbers of ASCII files (one for each star) with associated files containing the sequence information. It seems extremely well laid out - thank you Dave! Dave and I agreed that it was probably best if I wrote my own software to handle it. This has the advantage that I will properly understand how things work, and can easily modify it if necessary. I've done a considerable amount of programming as part of my work, and have also done a great deal at home; for example, I wrote my own CCD image analysis/photometry software. My programming is done in FORTRAN, which I learnt when I was doing my PhD and have used ever since.

It seems there are three parts to handling the database: (i) reading/checking/decoding the files received from observers; (ii) putting the data into the database and (iii) extracting data from the database. Part (i) is, no doubt, the hardest, and so far all my effort has been spent on this. I haven't got as far as (iii), hence the lack of lightcurves in this issue! In fact, part (i) is basically working. My software will now read and completely decode the standard format of data file received from observers, but making sure this procedure works reliably will take a little while longer. For example, this evening I realised that fractional estimates occasionally get reported as A(1)C(1)V; this is going to require a few dozen more lines of code. Also, the software needs to be able to cope with common typing errors, for example.

So, I am making progress. Stay tuned for another progress report in the next circular, hopefully with some lightcurves!

CHART NEWS

JOHN TOONE

The following Main Programme charts are now available from the chart secretary:

025.02 T CrB (formerly 025.01)
50 degree, 9 degree and 2 degree field charts have been drawn, and the sequence has been amended to adopt Tycho 2 (Vj) magnitudes. Comparison stars H and K have been dropped because they are MS Ser and NSV7378 respectively. They are replaced by new comparisons P (SAO84151, mag 8.37) and R (SAO84117, mag 9.22). Alpha Oph (mag 2.08) and S (SAO84100, mag 10.30) are also introduced. T CrB can go fainter than M, so N (GSC2037 1228, mag 11.30) is added to extend the sequence.

059.02 U Ori (formerly 059.01)
5 degree, 50' and 15' field charts have been drawn with the sequence completely overhauled. For many years observers have commented that comparison stars G and J are assigned
magnitudes that are too bright. This was confirmed, and other problems with the sequence were uncovered when they were investigated using Tycho 2 and Brian Skiff’s photometry. The new sequence is trimmed by deleting B, E, G, K, N, Q, T, W, X and AA. Stars added are DD (SAO94934, mag 7.31), BB (GSC 1320 878, mag 13.78) and CC (no GSC ident, mag 14.41). The new sequence is derived from Tycho 2 (Vj), B. Skiff photometry and Kitt Peak CCD(V).

The following Eclipsing Binary Charts are now available from the Eclipsing Binary Secretary:

252.01 ZZ Boo (formerly JEI 72.02.06)
A 9 degree field chart has been drawn retaining the previous sequence but with magnitudes amended to Hipparcos (Vj).

253.01 RS CVn (formerly JEI 72.02.06)
A 5 degree field chart has been drawn retaining the previous sequence but with magnitudes amended to Tycho (Vj).

254.01 U CrB (formerly JEI 1986 July 6)
A 5 degree field chart has been drawn retaining the previous sequence but with magnitudes amended to Tycho 2 (Vj).

255.01 Z Vul (formerly JEI 72.02.05)
A 1.5 degree field chart has been drawn to show the close companion (new comparison star L) to Z Vul. The sequence has been amended to adopt Tycho 2 (Vj) magnitudes. Comparison stars C, E, F and H are dropped and comparison L (GSC 2128 1962, mag 10.2) is added. Observers are urged to take care when observing Z Vul at minimum because of the close proximity of L.

The following AGN charts are now available from the chart secretary:

151.02 3C-279 (formerly TA chart GMH920516)
1 degree and 15° field charts have been drawn with a sequence derived from Tycho 2(Vj), A. Henden and VSNET. The previous sequence was based on GSC magnitudes.

244.01 3C-273 (formerly JT 15-7-84)
A 40° field chart has been drawn with the previous sequence retained. The magnitude of comparison star A has been amended from 10.1 to 10.29.

The following recurrent object charts are now available from the chart secretary:

256.01 V650 Ori
A 25° field chart has been drawn with a sequence from mag 11.6 to 16.3 by A. Henden adopted.

257.01 DK Cas
A 15° field chart has been drawn with a sequence from mag 11.8 to 16.4 by A. Henden adopted.

258.01 CP Dra (see inside cover for new chart)
A 15° field chart has been drawn with a sequence from mag 12.7 to 16.4 by A. Henden adopted.

259.01 V478 Her (see inside cover for new chart)
A 15° field chart has been drawn with a sequence from mag 12.5 to 16.8 by A. Henden adopted.
PROGRESS ON THE SU UMA PRO-AM PROJECT

DARREN BASKILL

This article is a quick overview of the successful completion of the recent XTE monitoring campaign of the dwarf nova, SU Ursae Majoris.

Firstly, I’d like to give thanks to everyone who contributed their optical observations, the results of which can be seen in figure 1 on the next page. As you can see, the campaign is divided into two sections: optical and x-ray observations. I’ll begin by discussing the optical data.

The first thing you may notice is that observations from the AAVSO database appear to dominate. However, don’t let this put anyone off, since every observation counts on its own individual merits. The BAAVSS have fewer observations (which is hardly surprising - I’m writing this in mid-July with thick cloud overhead!) which just means that BAAVSS observers are less likely to catch an outburst than the AAVSO. But the BAAVSS are still catching some outbursts first, which is what we are all aiming for.

The light curves show that the x-ray observations appear to mirror the optical observations. But what causes this? Even during quiescence material is falling through the disc, giving optically an ~14.5 apparent magnitude disc. Meanwhile, XTE detects ~1.5 x-rays per second from material pounding the white dwarf at the centre of the disc. When the mass transfer rate through the disc increases, the disc optically outbursts. After a delay, the region at the centre of the disc becomes optically thick due to the in-flowing material, and the x-rays cannot escape. This is why the XTE count rate falls to zero.

During the campaign, we managed to catch six outbursts. This was the ultimate aim of the project, allowing comparisons of the x-ray emission between successive outbursts. A graph of recurrence frequency against x-ray brightness revealed that SU UMa was the best target; it outbursts every ~15 days, and it is the second x-ray brightest dwarf nova observed with the ROSAT satellite. Unfortunately, there are potential problems with both these points: the ROSAT observations were short snapshots within the outburst cycle, so we had no handle on how the x-ray count rate varied, and SU UMa undergoes superoutbursts (a ~5 times longer outburst). Had we been unlucky, we would have observed just one long superoutburst.

You may also note that, on some occasions, the x-ray count rate appears to go below zero! Of course, this is a physical impossibility, but demonstrates the limitations of XTE.

Many x-ray observatories have imaging capabilities. If you have internet access, you can see the x-ray view of any area of the sky, using the ROSAT all sky survey at: http://ledas-www.star.le.ac.uk/arnieV4/dbframe/frame_rassimages.html
(Just type in an object name, click “resolve name”, “submit query” and then “products”, before clicking on the image to get a full sized image of that region of sky).
Imaging x-ray telescopes do not just produce pretty images, but also allow foreground x-rays to be separated from background x-rays. There is a constant hiss of background x-rays, of which at least 75%, if not all, are coming from very distant active galaxies. A ROSAT image of the moon demonstrates this well - the dark side of the Moon is actually darker than the “blank” x-ray sky behind it! [ http://ledas-www.star.le.ac.uk/rosat-goc/moon.gif ]
Figure 1: The optical and x-ray light-curve of the dwarf nova SU UMa. Top panel shows the optical observations (the contributions by the BAA-VSS are shown as stars, and the AAVSO contribution as dots), and the bottom panel shows the x-ray light curve from the XTE satellite (error bars are 1-sigma error, and so the x-ray count rate has a 68% chance of lying within the range indicated). Source: http://www.star.le.ac.uk/~dbl/suuma.ps
However, the XTE satellite has no imaging capabilities whatsoever. A “guess” of the background is subtracted from the data, which is based on frequent observations of “empty” patches of sky. Where negative count rates occur, the background has been over-estimated. This problem can usually be neglected, as the foreground usually dominates any error on the background estimation, but this is not the case during the optical outburst when there is little x-ray emission.

Another striking feature of the light-curves are the wild variations in the x-ray count rate during quiescence. So, even whilst the majority of the disc is in a stable quiescent state, there are still rapid variations in the amount of material hitting the white dwarf from the inner disc. It would have been nice to have been able to observe SU UMa in the extreme ultraviolet at the same time, which would have told us the exact mass flow through the inner disc.

These x-ray fluctuations agree with recent theoretical work carried out by colleagues here at Leicester University (Graham Wynn, Mike Truss and James Murray). Their research simulates the physics occurring in dwarf novae accretion discs. By using UKAFF, a 128 processor supercomputer, they have discovered what they call mini-outbursts - small amplitude, short lived oscillations in both x-ray and optical wavelengths. Further analysis of the data is required to confirm if these mini-outbursts are what we are observing in the SU UMa data. UKAFF has also been used to simulate a host of other astrophysical phenomena such as colliding stars, star cluster formation, and merging neutron stars, to name but a few. For more information, see http://www.ukaff.ac.uk

In this article I have quickly described some of the highlights of our observing campaign. Much more work still needs to be done on this data, and I have yet to look at the spectral information! The detailed analysis of this data may take a year or more to complete, due to the more urgent task of completing my PhD thesis. When I finally complete a thorough analysis of the SU UMa data, we will have improved our understanding of how dwarf novae work. This is something which would not have been possible without the help of the amateur astronomers who have contributed to this project.

Darren Baskill: dbl@star.le.ac.uk; http://www.star.le.ac.uk/~dbl

ECLIPSE OF OW GEMINORUM
ALEX VINCENT

The long period eclipsing binary star OW Geminorum will be at minimum on January 3/4, 2002. This star has a period of 3.4459 years (1258.63 days), and at maximum it is of magnitude 8.2 and drops to 10.0 at minimum. The duration of the eclipse lasts 16 days, and so observations should be made between December 26 and January 12. The primary star is almost totally eclipsed at minimum.

The orbit of OW Geminorum is elongated and therefore secondary minima are to one side of primary minima, and the next one is due around October 26, 2002. The amplitude will be much shallower at secondary minimum. The star is at RA 06h 31m 42s, Dec +17° 04.9’ (2000). It is about 1.5 degrees of the second magnitude star Gamma Geminorum. Good observing.
Nova Cyg 2001, now designated V2274 Cyg was discovered at magnitude 11.9 by Yuji Nakamura using Tri-X film exposed on July 13.651UT with a 200mm f/4 lens. Subsequent images taken by H. Fukushima, NAO, resulted in the following magnitudes: July 16.515, V = 11.69; 16.533, I = 9.55.

The spectrogram shown here was taken by Maurice Gavin, Worcester Park on July 18 at 02h08m36sUT with a 0.30-m Schmidt-Cassegrain telescope + grating + MX9 CCD on a 60 sec exposure. Unfortunately poor conditions meant that a spectral analysis was inconclusive. The image below was taken by Denis Buzcynski.
LONG TERM TRENDS IN ECLIPSING BINARIES

Tony Markham

From time to time analyses of eclipsing binary minima are published. These quote O-C values, showing how the observed time of eclipses differed from those calculated using the elements in the GCVS. Negative values indicate that the eclipse is occurring earlier than predicted; positive values indicate that it is late.

However, these analyses typically only list results for a particular year, so it is not straightforward to see long term patterns.

The accompanying graphs summarise the results published in VSS circulars since the late 1980s for primary eclipses of four eclipsing binaries. The RZ Cas graph also includes results from the SPA VSS.

In these graphs, PEP indicates that the analyses were based on photoelectric observations of a single eclipse; vis1 indicates that the analysis was based on visual observations of a single eclipse by a single observer; visMult indicates that observations of several eclipses were combined and visSPA indicates analyses of all visual observations by SPA VSS members during a calendar year. O-C values are in days; the horizontal axis shows the Julian Date-2400000.
As can be seen, analyses based on visual observations of a single eclipse by a single observer show considerable scatter. However combining visual observations of several eclipses by several observers significantly reduces this scatter. Similarly PEP results show low scatter.

For **RZ Cas**, the trend is for the O-C values to become increasingly positive, indicating that the true orbital period is slightly longer than the GCVS value. For **AR Aur** and **AR Lac**, the opposite is true.

For **VW Cep**, the situation is more confusing. All analyses claim to have used the elements from the GCVS 4th edition, but there is an apparent jump in O-C values after JD (24)49500. Results published in IBVS circulars confirm the negative values prior to this date, but unfortunately they include no published O-C values for after this date.

There may be a simple explanation however which doesn't require unusual behaviour in **VW Cep** itself. VW Cep is an EW type variable with a period of approx 0.278 days. Since both stars in such systems are very similar, it isn't straightforward to say whether an observed eclipse is a primary or a secondary eclipse. The interval between primary and secondary eclipses in VW Cep will be approx half of the orbital period - i.e. approx 0.139 days. Thus by JD 24(48500) the primary eclipse was occurring so early that it was more than half of the way to the predicted time of the preceding secondary eclipse.

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**VW Cep : O-C values**

![Graph showing O-C values for VW Cep](image-url)
It is probably the case therefore that the three points with positive O-C values were actually observations of secondary eclipses occurring early. If we make this assumption then the last 3 points (+0.0422, +0.0251, +0.0239 days) instead become -0.0969, -0.1140, -0.1152 days, and hence shift below the axis to continue the downward trend of the earlier years.
IBVS’s 4951 - 5080

GARY POYNER

4951 CCD Photometry of the eclipsing binary HV Aqr. (Petr and Marek, 2000)
4952 BV Photometry of the binary star VW LMi. (Dumitrescu, 2000)
4953 UBV observations of AG Dra in the end of the latest active phase and after it. (Tomov and Tomova, 2000)
4954 CCD Light curve and revised period for the RRc Variable AP Ser. Blattler, 2000)
4955 1432-0033: A new eclipsing SU UMa type dwarf nova. (Vanmunster et al, 2000)
4956 First determinations of photoelectric minima, real period and study of the period of NP Pav. (Cerruti, 2000)
4957 Nova CI Aql in decline. (Schmeja et al, 2000)
4959 On the variability of K5-M stars. (Adelman, 2000)
4960 2000 BVRI photometry of FK Comae. (Tas and Evren, 2000)
4961 New times of minima and light elements of KR Cygni. (Sipahi and Gulmen, 2000)
4962 New CCD Observations of UU Sagittae and V477 Lyrae. (Kiss et al, 2000)
4964 Three Delta Scuti stars in the open cluster NGC 2506. (Kim and Chun, 2000)
4965 CCD Light curves of ROTSE1 variables, I: GSC 3099.905 Herculis (Blattler and Diethelm, 2000)
4966 CCD Light curves of ROTSE1 variables, II: GSC 3100.1616 Herculis (Blattler and Diethelm, 2000)
4967 CCD times of minima of eclipsing binary systems. (Biro et al, 2000)
4969 On the variability of A3-F0 luminosity class III-V stars. (Adelman, 2000)
4970 An SX Phe star in the globular cluster M15. (Jeon et al, 2000)
4971 The orbital period of LV Herculis. (Torres, 2000)
4972 GSC 156.1365, a new EB eclipsing binary star in Monoceros. (Gomez-Forrellad et al, 2000)
4973 NSV 01756: A red variable in Eridanus. (Gomez-Forrellad and Henden, 2000)
4974 NSV 11766: A new short period pulsating variable. (Garcia-Melendo and Nomen-Torres, 2000)
4975 CCD Light curves of ROTSE1 variables III: GSC 2625.1563 Herculis. (Blattler and Diethelm, 2000)
4976 CCD Light curves of ROTSE1 variables IV: GSC 2636.1753 Lyrae. (Blattler and Diethelm, 2000)
4977 BVRI Observations of V516 Cygni in outburst. (Spogli et al, 2000)
4978 BVRI Observations of KT Persei in outburst. (Spogli et al, 2000)
4979 Broad band photometry of CG Cygni. (Afsar and Ibanoglu, 2000)
4980 Three colour photometry of IN Comae. (Afsar and Ibanoglu, 2000)
4981 GSC 2293.1021: A newly discovered W UMa variable. (Liu et al, 2000)
4982 CCD Light curves of ROTSE1 variables V: GSC 3131.476 Lyrae, GSC 2646.1938 Lyrae. (Blattler and Diethelm, 2000)
4983 Discovery of eclipsing binary nature of SAO 31628 = BD+49°2997, common comparison star for CH Cygni. (Sokoloski and Stone, 2000)
4984 On the variability of A0-A2 luminosity class III-V stars. (Adelman et al, 2000)
4985 CCD light curves of ROTSE1 variables VI: GSC 3123.1618 Lyrae, GSC 3551.81 Cygni. (Blattler and Diethelm, 2000)

Stromgren photometry of the T Tauri star SU Aurigae: Multi timescale light variations. (Nadalin et al, 2000)

First photometry observations of GQ Draconis. (Atay et al, 2000)

New field variable stars III. (Csak et al, 2000)

BV Photometry and the first ephemeris of the eclipsing binary star GV Dra. (Dallaporta et al, 2000)

BVR Photometry of the RS CVn type binary RT Andromedae. (Yakut and Ibanoglu, 2000)

II Pegasi reached the largest amplitude up to now. (Tas and Evren, 2000)


V383 Velorum, a new Dwarf Nova. (Williams, 2000)

CCD Light curves of ROTSE1 Variables VII: GSC 3564.3059 Cygni, GSC 3121.1799 Lyrae. (Blattler and Diethelm, 2000)

CCD Light curves of ROTSE1 Variables VIII: GSC 3920.882 Cygni, GSC 3921.1531 Cygni. (Blattler and Diethelm, 2000)

CCD light curve and new elements of V1823 Cyg. (Martignoni and Acerbi, 2000)

Light elements and a preliminary solution for the light curve of the eclipsing binary GSC 1534.0753 (Lubcke et al, 2000)

Delta Velorum is an eclipsing binary. (Otero et al, 2000)

The drama of eta Carinae. (Sterken, 2000)

GSC 5728.92: A new W UMa variable. (Rea and Walker, 2000)

BVR photometry of the W UMa star V2388 Ophiuchi in 2000. (Yakut and Ibanoglu, 2000)

On the variability of F1-F9 luminosity class III-V stars. (Adelman et al, 2000)

Nova Velorum 1999: Light curves and spectrophotometry. (Liller and Jones, 2000)

UBV photometry of the symbiotic star Z And during its 2000 outburst. (Skopal et al, 2000)

UBV photometry of BX And. (Jassur et al, 2000)

Comment on the cooler component of the eclipsing RS CVn binary CF Tuc (HD 5303). (Coates et al, 2000)

On the variability of O4-B5 luminosity class III-V stars. (Adelman et al, 2000)

V807 Cas is an eclipsing binary star. (Garcia-Melendo and Henden, 2000)

HD 264300 is a low amplitude red variable. (Gomez-Forrellad and Henden, 2000)

1994 BV photometry observations of CG Cygni. (Dapergolas et al, 2000)

NSV 24505: A Semi-Regular variable. (Lloyd et al, 2001)

Hα observations of T CrB. (Zamanov and Marti, 2001)

The EUV source HD 52452: Discovery of a likely triple system. (Messina et al, 2001)

Historical archive photometry of μ Cephei. (Skiff, 2001)

Photoelectric minima of selected eclipsing binaries and new elements for several stars. (Agerer and Hubscher, 2001)

Photoelectric minima of selected eclipsing binaries and maxima of pulsating stars. (Agerer et al, 2001)

Precision light elements and light curve for the eclipsing binary LD 355. (Guiibault et al, 2001)

One new and one suspected Delta Scuti star: HD 192871 and HD 230990. (Handler and Paunzen, 2001)

LO Gem: First determination of the orbital period and light curve. (Vandenbroere et al, 2001)
5021 NSV 5904: A new W UMa eclipsing binary. (Vandenbroeke et al, 2001)
5022 LD 347: A new eclipsing binary. (Berthold et al, 2001)
5023 Unusual short period dwarf nova RX J2315.5-3049. (Ishioka et al, 2001)
5024 GSC 3969.2430 Lac: A new short period eclipsing binary. (Agerer, 2001)
5025 A possible light curve of R Coronae Borealis for the nearest future. (Rosenbush, 2001)
5026 The optical behaviour of Delta Scorpii. (Otero et al, 2001)
5027 Times of minima of eclipsing binaries from ROTSE1 CCD data I: Named variables. (Diethelm, 2001)
5028 CCD observations of MWC 560 = V694 Mon. (Ishioka et al, 2001)
5029 The short period eclipsing binary GSC 3123.1618. (Billings et al, 2001)
5030 On the variability of three guide star catalogue stars. (Paunzen et al, 2001)
5031 WY Tri: A new SU UMa type dwarf nova. (Vannmunster, 2001)
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5033 UBV photometry of EF Boo. (Ozdemir et al, 2001)
5034 The first ground based photometric observations of V899 Her. (Ozdemir et al, 2001)
5035 J1714.9+4210: A variable faint high latitude carbon star. (Meusinger and Brunzendorf, 2001)
5036 V band observations of V4641 Sagittarii. (Marti et al, 2001)
5037 Variable BSS candidates in M3 proved to be Quasars. (Meusinger et al, 2001)
5038 Times of minima of eclipsing binaries from ROTSE1 CCD data, II: Suspected and recently named variables. (Diethelm, 2001)
5039 Two new short period variables: HD 88278 and HD 128862 (Koen et al, 2001)
5040 CCD minima of selected eclipsing binaries in 2000. (Nelson, 2001)
5041 Periods of 25 pulsating red giants. (Percy et al, 2001)
5042 UBVR photometry of contact binary XY Leonis. (Yakut and Ibanoglu, 2001)
5043 Starspots on the young solar-type star π1 Ursae Majoris. (Bochanski et al, 2001)
5044 DP Pegasi: CCD light curve and elements of variation. (Diethelm et al, 2001)
5045 V404 Lyrae in the field of the very old galactic cluster NGC 6791. (Csizmadia and Sandor, 2001)
5046 YY Her - Secondary eclipses in the system revealed. (Hric et al, 2001)
5047 Accurate positions of variable stars in the western part of the Large Magellanic cloud bar. (Shokin, 2001)
5048 Reclassified and new variables in the archival Harvard College Observatory LMC photometry. (Garcia-Melendo and Gomez-Forrellad, 2001)
5049 Two new contact binary stars. (Csak et al, 2001)
5050 On the variability of stars. (Adelman, 2001)
5051 Discovery of a secondary spectrum in the SB1 system HD 434. (Iliev et al, 2001)
5053 A new faint W UMa type variable in the galactic halo. (Jeon et al, 2001)
5054 New observations of the possible high amplitude Delta Scuti variable V854 Scorpri. (Van Cauteren et al, 2001)
5055 Three new southern emission-line late type dwarfs. (Gray and McFadden, 2001)
5056 New photometric minima and updated ephemerides of selected eclipsing binaries. (Pribulla et al, 2001)
5057 V802 Aql is an eclipsing binary of W UMa type. (Van Cauteren and Wils, 2001)
5058 New dwarf novae on Moscow plates. (Kryachko, 2001)
5059 Observations of NSV 04832 (Gomez-Forrellad, 2001)
5060 Times of minimum of eclipsing binaries from ROTSE1 CCD data, III Variables

15
classified as type E. (Diethelm, 2001)

Maxima of the SX Phoenicis star BL Camelopardalis. (Zhou et al, 2001)

Pre-discovery photometry of the γ Doradus type pulsating star HR 8330 (=HD207223). (Guinan et al, 2001)

A spectrum of R CrB during recovery from 2000 minimum. (Kipper, 2001)

GSC 8527.373: A new Delta Scuti variable. (Rea, 2001)

NSV 03007 is an EW eclipsing binary system. (Garcia-Melendo and Sanchez-Bajo, 2001)

HD 193986 is an Algol type eclipsing binary star. (Vidal-Sainz, 2001)

Times of minima of eclipsing binaries. (Sandberg et al, 2001)

The orbital V band light curve of V4641 Sagittarii. (Goranskij, 2001)

Photoelectric minima times of some eclipsing binaries. (Albayrak and Gurol, 2001)

Outburst photometry of DK Cas. (Kato and Uemura, 2001)

On the supercycle of SX LMi. (Kato, 2001)

BVR photometry of SN 2000E. (Devyatkin and Gorshanov, 2001)

Period determination for V576 Herculis and V1116 Cygni. (Yoshinaga and Benson, 2001)

CCD Light curve and new elements of BE Eri. (Martignoni, 2001)

HD 93917 is a new EW eclipsing star. (Lasala-Garcia, 2001)

Binary star morphology and the name overcontact. (Wilson, 2001)

Photometric periodicity of BZ Cam during the 1999 fading. (Kato and Uemura, 2001)

SU UMa type Dwarf Nova V369 Peg. (Kato and Uemura, 2001)

The discovery of brightness variations of HD 280340 and GSC 2895.1172. (Robb et al, 2001)

Times of maximum light for AE Ursa Majoris. (Pejcha et al, 2001)

The Information Bulletin on Variable Stars (IBVS) can be accessed through the WWW in HTML format at the following URL... http://www.konkoly.hu/IBVS/IBVS.html

RECENT PAPERS ON VARIABLE STARS

Tristram Brelstaff


The Cessation of Eclipses in SS Lacer tae: The Mystery Solved, G. Torres and R. P. Stefanik, Astron. J., 119, 1914-1929 (2000) - SS Lac is listed in the GCVS as a 10th mag, 14.4d eclipsing binary and lies in the open cluster NGC 7209. However, its eclipses have not been seen since the 1930’s. The present authors use radial velocity measurements to show the presence of a 3rd body in a 679d orbit. Perturbations by this 3rd body are the cause of the disappearance of the eclipses. The authors also reanalyse published times of eclipse and show the presence of apsidal motion with a period of around 1000 years.

Analyses of the Currently Non-eclipsing Binary SS Lacer tae or SS Lacer tae’s Eclipses, E. F. Milone et al, Astron. J., 119, 1405-1423 (2000) - Remeasure Harvard plates and reanalyse all available data to show that the eclipses of SS Lac probably started occurring in 1885, reached maximum amplitude in 1911 and stopped occurring in 1937. Modelling suggests that the components are both early A-type stars with masses of 2.6 solar masses. The distance is about 900pc and membership of NGC 7209 is confirmed.
ECLIPSING BINAR Y PREDICTIONS

TONY MARKHAM

The following predictions, based on the latest Krakow elements, should be usable for observers throughout the British Isles. The times of mid-eclipse appear in parentheses, with the start and end times of visibility on either side. The times are hours GMAT (UT-12h). D and L are used to indicate where daylight and low altitude respectively prevent part of the eclipse from being visible. The variables (charts available on BAAVSS web page) covered by these predictions are:

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RW Gem  L10(07)12
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Z Dra   12(15)17D

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Z Vul   D06(09)14L
RW Tau  L08(07)11
SW Cyg  D06(04)10
TX UMa  12(17)17D
Z Dra   12(15)17D

2001 Oct 3 Wed
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TW Dra  D06(09)14

2001 Oct 4 Thu
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Z Dra   D06(08)10
Z Per   D06(09)14
U Sge   D06(10)13L
RZ Cas  07(10)12
Y Psc   D06(04)09
Z Vul   D06(05)10
U Cep   D06(09)14
Z Dra   09(11)14

2001 Oct 5 Fri
X Tri   16(19)17D

2001 Oct 6 Sat
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TW Dra  D06(09)14

2001 Oct 7 Sun
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TW Dra  D06(09)14

2001 Oct 8 Mon

2001 Oct 9 Tue

2001 Oct 10 Wed

2001 Oct 11 Thu

2001 Oct 12 Fri

2001 Oct 13 Sat
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X Tri 17(19)18L
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X Tri 16(19)18L
RZ Cas 18(20)18D

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U Cep 14(19)18D
X Tri 16(18)18L

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X Tri 15(17)18L

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HU Tau L06(06)10
Z Dra 07(10)12
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X Tri 14(17)18L

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TW Dra 16(21)18D
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Whilst every effort is made to ensure that information in this circular is correct, the Editor and Officers of the BAA cannot be held responsible for errors that may occur.

The deadline for contributions to the 110th issue of VSSC will be 7th November, 2001. All articles should be sent to the editor (details are given on the back of this issue).

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TELEPHONE ALERT NUMBERS

**Nova and Supernova discoveries**  
First telephone the Nova/Supernova Secretary. If only answering machine response, leave a message and then try the following: Denis Buczynski 01524 68530, Glyn Marsh 01772 690502, or Martin Mobberley 01245 475297 (weekdays) 01284 828431 (weekends).

**Variable Star Alerts**  
Telephone Gary Poyner (see above for number)

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