



CCD Views Vol. 3 No. 2

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C C D V I E W S

 April, 2002 Vol 3 No 2

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1. INTRODUCTION: LAST CALL FOR FILTERS

We have noticed that many observers are still making estimates of variables without using a proper photometric filter. These estimates are not of much value when combined with other observations in our database since CCDs respond to light differently when unfiltered. The AAVSO has a small grant to load filters to observers. If you would like a V or R filter please fill out and send the form below to aavso@aavso.org. In one week we will place all the orders collected over the past 3 months. So act now and get a filter!

Don't forget the upcoming 91st Spring Meeting of the AAVSO and the 2nd High-Energy Astrophysics Workshop for Amateur Astronomers. Talks on CCD photometry along with cataclysmic variable and GRB workshops are calling your name. Find out more at: <http://www.aavso.org/meetings/spring02.stm>

Also, we will most likely be issuing a special edition of CCD Views in May with comments from J.A.M. on many long period variables. So stay tuned!

Aaron Price (PAH)
 AAVSO Headquarters

Gary Walker
 CCD Committee Chair

CCD V & R FILTER REQUEST FORM

Name:

Observer Code:

Full Mailing Address:
Telephone Number:
CCD:
What size filter do you need?:
Which filter(s) do you need? (V, R, or both):

2. V838 MON UPDATE: LIGHT ECHOES AND FUTURE ACTIVITY

The initial outburst of V838 Mon appears to be acting as a flashlight illuminating its stellar neighborhood. As the light from the outburst continues to expand, it is reflecting off material shed over the past few millenia. This interaction is creating a halo of brightness around the star that can be seen in a striking U-band image taken by M. Schwartz of Tenagra Observatory, found at the URL:

<http://www.aavso.org/ccdviews/v838monlightecho.shtml>

It was suggested by A. Henden et. al. in IAUC 7859 that this "light echo" is the result of energy from the initial January 1 outburst of the star interacting with a circumstellar shell of material released over the past few thousand years. If so, when the bright light from the February 2nd outburst reaches the material we should see another light echo, except this one may be quite a bit brighter (due to the brighter nature of the 2nd outburst).

As the wavelengths increase across the B, V, R, and I photometric bands the light echo becomes harder to see. This could be a result of the inherent red color of the star, the fact that dust tends to reflect blue light more than red, or a combination of the two.

If the 2nd outburst does indeed create a 2nd brighter echo then this could be a rare opportunity for amateurs to do some multi-colored photometry on a circumstellar shell. If this happens, the AAVSO will publish comp stars to use in the B, R, and I bands as well. So keep your filters handy and stay alert!

3. SN 2002AP DATA REQUEST & UPDATE

Now that SN 2002ap is hidden in the glare of the Sun it is time to turn to data reduction. We are planning to publish SN 2002ap data in May so for this month we would like to process and finalize the data. As mentioned in the original announcements, we would like to collect copies of your FITS images used in your observations. Please FTP them to the location below:

host: ftp.aavso.org
user: ftp
password: your e-mail address
directory: upload/public/sn2002ap

NOTE: Make sure we can tell your filename from someone else's. One way is to put your observer code somewhere in the filename. Example for observer XXX: **sn2002ap-XXX-1.fits, sn2002ap-XXX-2.fits ...**

Either in the FITS headers (preferably) or in a separate text file, give us all the information you can about your observations. This

includes name, date and time (UT), geographic location, filter, CCD, telescope, and anything else pertinent (weather, glare, etc.).

Also, if you have made observations using a chart other than the final one released on February 8th, please update your observations. You can find that chart at <http://www.aavso.org/charts/PSC/SN2002AP/> . Simply resubmit the observations with the new estimate and then e-mail aavso@aavso.org when done and we will remove the older duplicate observation.

Remember our goal with this project was to collect the very best data we can. We would like to share this data (both the light curves and the FITS files) with the professional community to show them what our capabilities are and see if there is an opportunity for future supernova collaborations. So please reduce your data carefully and do the best job possible!

As we process your data we will send you an individual e-mail confirming receipt of your data and with a progress update. Please send your data as soon as possible because it will take us considerable time to work through it all.

For those who are doing photometry in R and I, here are the color values of the comp stars on the aforementioned chart.

Comp	V-R	R-I	V-Rerr	R-Ierr
117	0.616	0.532	0.013	0.011
129	0.390	0.352	0.011	0.009
130	0.443	0.470	0.012	0.009
137	0.363	0.365	0.016	0.009
139	0.496	0.477	0.013	0.015
144	0.411	0.384	0.006	0.017
146	0.338	0.360	0.021	0.012
151	0.371	0.375	0.007	0.023
156	0.479	0.434	0.024	0.026
159	0.435	0.403	0.037	0.073
163	0.429	0.369	0.059	0.123
168	0.289	0.328	0.070	0.018
171	0.433	0.401	-0.012	-0.014

This data is courtesy A. Henden (USNO) and is available in its entirety at <ftp://ftp.nofs.navy.mil/pub/outgoing/aah/sequence/> .

4. CCD SPECTROPHOTOMETRY

By Doug West (WJD)

The proliferation of the use of CCD cameras by amateur astronomers has brought us the ability to image objects much fainter than was possible just 15 years ago. One of the latest developments is the use of the CCD camera and a diffraction grating to measure the spectra of stars. Low resolution spectrophotometry can tell the effective temperature, spectral type, and gives information about the chemical composition of the star.

My involvement with CCD spectroscopy started about three years ago when I developed an amateur-professional relationship with Dr. David

Alexander at Wichita State University. Dr. Alexander is interested in the study of cool giant type stars, for example, mu Gem and W Cyg. I was able to contribute to the research with multi-band photometry (BVRI) and through low resolution spectrophotometry. In June 2000 I gave a poster presentation at the American Astronomical Society (<http://www.aavso.org/ccdviews/spectropresentation.ppt>). This presentation has information about what low resolution spectrophotometry can tell us about the stars and what is required to get started in CCD spectroscopy.

There are several web sites that have information about taking the spectra of stars. Two sites that I have found very useful are <http://www.astroman.fsnet.co.uk/> and <http://users.erols.com/njastro/faas/> .

5. TIPS FOR FINDING THE FIELD

By Gary Walker, CCD Committee Chair

Here is a tip that I wanted to pass on to our ccd observers, particularly those just getting started. Finding the fields has always been a challenge. I have used high power finders in the past but found that they also have their problems.

What I have discovered fairly recently, is that with a well aligned 7x50 finder, I am able to put a star on the center of the chip every time. The trick is to use your usual procedure to center a star on your ccd. Now look thru your finder. You will probably find that the bright star is not in the center of the cross hairs. What I have done is reset the finder so that the bright star is exactly in the center of the crosshairs. Now you should be able to put any other star in the center of your chip.

To give everyone some scale, I use a 7x50 finder which has a 6 degree field--this is pretty standard. My chip and scope give a 12 arc minute field, which is typical for ccd photometry. Another requirement is to mount the camera, and not rotate it after you have set the finder. It turns out that many cameras do not exactly center their chips, so if you rotate the camera to pick up a new guide star, the center of the finder and the center of the chip, may not coincide any more.

As a result, I have chosen to fix the camera, with ra going left and right and dec going up and down on the display. I never move the camera. I align the finder scope so that a star centered in it will be on the center of the chip. This is done in two steps. First I point the scope using the finder cross hairs, then I look on the monitor using the focus function, and move the scope until the star is right in the center. I usually have less than 2 arc minutes of error. The second step is to go back and align the finder exactly. I usually have to realign the finder only once a season. It stays pretty well. This means that your finder may not be exactly aligned when you use your eyepieces, but I find this an acceptable trade off. This also assumes that you have solved the mirror flop with focusing problem that affects most moving primary mirror optical systems. I am also fortunate enough to have a permanent setup, so the finder does not get tweaked during transit.

So if you have been ignoring your finder, as I have for many years, and you have a field near 12 arc minutes on your ccd, this technique may make centering a field much simpler.

6. NEW CCD CHARTS

We recently put on-line 239 new charts for 84 variable stars. Of these, 35 of the stars were already in the AAVSO observing program and we made new and expanded scales available. The other 49 stars have been in the AAVSO program but did not have published AAVSO charts until now.

Most of the stars are faint with e and f-scale charts. The e-scale charts were based on the USNOA2 and Tycho-2 catalogs and the f-scale charts use DSS images. For most of the f-scale charts we have been able to include CCD tables with comparison star magnitudes typically to 0.02 magnitude accuracy and B-V color data.

More information on these new charts including a list of the stars can be found at this new web page: <http://charts.aavso.org/hs.shtml> .

The selection of comparison stars in each field are made and contributed by Bruce Sumner and the CCD V and B photometry are from Arne Henden. The AAVSO thanks Arne and Bruce for their valuable contribution to this project.

The charts were created by Mike Simonsen and Aaron Price in most cases using the computer program developed at AAVSO headquarters by George Hawkins. Please send any comments on or about the charts to charts@aavso.org.

7. CCD POINTS

Wow. In the last issue we had 36 individual CCD observers, now we have 53! This field is really beginning to take off. For those of you who are new, feel free to send questions to aavso@aavso.org or post to the AAVSO Discussion Group. And keep up the great work!

I know I promised a running total in this issue but I lied. Time constraints reared its ugly head. We'll shoot for the next issue.

As always, remember that CCD Points are for *fun only* and serve no official AAVSO purpose and are not recorded anywhere other than CCD Views. In fact, I spend more time checking the locations of observers in the list than I do checking the point totals! :)

Pts	Obs	Who	Where
2061	929	OAR OKSANEN, ARTO	FINLAND, MUURAME
1024	231	DRG DIETHELM, ROGER	SWITZERLAND, RODERSDORF
492	131	GKA GRAHAM, KEITH A.	IL, MANHATTEN
455	153	WJD WEST, JERRY DOUG	KS, MULVANE
405	350	NLX NELSON, PETER	AUSTRALIA, ELLINBANK
403	142	WGR WALKER, GARY	MA, SHERBORN
357	141	COO COOK, LEWIS M.	CA, CONCORD
306	121	ZRE ZISSELL, RONALD E.	MA, SOUTH HADLEY
303	77	SFK SCHEDER, FRANK L.	MD, LEONARDTOWN
186	99	MTK MICHALIK, TOM	VA, LYNCHBURG

163	21	NMI	NICHOLAS, MIKE	AZ, GLENDALE
160	60	AWJ	AQUINO, WILLIAM JOHN	NY, WHEATFIELD
159	49	GBL	GARY, BRUCE L.	CA, SANTA BARBARA
153	22	ARJ	ARNOLD, JAMES	TX, DAINGERFIELD
150	188	AMI	AHO, MIKA	FINLAND, KORPILAHTI
141	53	KDM	KLINGLESMTIH, DANIEL A.	NM, SOCORRO
135	123	KMP	KOPPELMAN, MICHAEL	MN, GOLDEN VALLEY
134	22	PCH	PULLEN, CHARLES	CA, WILTON
128	154	SDB	STARKEY, DONN RAY	IN, AUBURN
126		RIX	RICHARDS, THOMAS J.	AUSTRALIA, ELTHAM, VI
115	47	SYZ	SANCHEZ, CRISTINA	SPAIN, GIJON-ASTURIAS
113	465	RCW	ROBERTSON, CHARLES W.	KS, GODDARD
75		HDU	HURDIS, DAVE	RI, NARRAGANSETT
62		RGY	RUBRIGHT, GARY	PA, LANCASTER
60		RZD	RODRIGUEZ, DIEGO	SPAIN, VILLALBA, MADR
49		MMN	MARTIGNONI, MASSIMILIANO	ITALY, MILAN
46		SHB	SHERROD, CLAY	AR, NORTH LITTLE ROCK
44		VWA	VAN WERVEN, ARNO	FL, PLANTATION
42		WJL	WILLIAMS, JAMES L.	CA, STOCKTON
36		BVJ	BARENTINE, JOHN	NM, SUNSPOT
35		HOU01	HOETTE, VIVIAN	WI (YERKES)
33		GTN	GANDET, THOM	AZ, TUCSON
33		PAH	PRICE, AARON	MA, WATERTOWN
33		RSE	ROBINSON, STEPHEN E.	MD, ROCKVILLE
22		UMB01	TITTLE, ERIC	MD (UNIV MARYLAND)
22		RVM	RIGO VIDAL, MIQUEL	SPAIN, MALLORCA
21		GFB	GOFF, WILLIAM	CA, SUTTER CREEK
21		OCN	O'CONNOR, STEPHEN D.	CANADA, MONTREAL, QUE
21		RVM	RIGO VIDAL, MIQUEL	SPAIN, MALLORCA
20		SBS	BREWSTER, STEPHEN	CA (ORIG. SINGER-BREW
20		MLF	MONARD, LIBERT A.G. (BERTO)	SOUTH AFRICA, PRETORIA
19		KZX	KERESZTY, ZSOLT	HUNGARY, MISKOLC
18		KDA	KAISER, DANIEL H.	IN, COLUMBUS
14		CRI	CASAS, RICARD	SPAIN, BARCELONA
18		KDA	KAISER, DANIEL H.	IN, COLUMBUS
14		CRI	CASAS, RICARD	SPAIN, BARCELONA
12		TPE	TIKKANEN, PETRI	FINLAND, JYVASKYLA
12		BJS	BEDIENT, JAMES R.	HI, HONOLULU
12		GAJ	GARCIA, JAMIE RUEBEN	ARGENTINA, B.A. LI
12		MTT	MATTEI, JANET AKYUZ	MA, LITTLETON
10		MHE	MAIER, HARALD	GERMANY, MUNICH
10		AMI	AHO, MIKA	FINLAND, KORPILAHTI

Observations less than 20 are withheld from view in order to protect our super-duper-secret point formula.

CCD Views is published bimonthly and when circumstances warrant via e-mail. An archive is available at <http://www.aavso.org/ccdviews/>. Please send comments and suggestions to aaronp@aavso.org.

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Views", a similar newsletter intended for visual observers. To learn more and subscribe visit: <http://www.aavso.org/maillinglists.stm>

Good observing!

Aaron Price, AAVSO Technical Assistant (PAH)

Gary Walker, Chairman of the AAVSO CCD Committee (WGR)

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