

Eyepiece Views: May, 2002

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E Y E P I E C E V I E W S

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1. ALOHA !

Warm weather is not the only thing arriving in the northern hemisphere. The 91st Spring Meeting of the AAVSO will take place on the Big Island of Hawaii the first week in July. We expect to welcome many observers from the Pan Pacific region as well as from other parts of the world. Since colder and longer nights are approaching in the southern hemisphere, we hope this meeting will be a short opportunity to re-live warmer nights for our observers down under.

Throughout the upcoming months there are several special observing campaigns underway. You will find reminders about the RXTE campaign in this issue and a new one we just received today. (See 2a and 2b Special Observing Requests by Janet A. Mattei)

You will receive the next issue of EYEPiece Views right after our spring meeting. We hope to see many of our valuable observers in Hawaii and until then, we wish you the best dark, clear skies.

Thanks and good observing!

Gamze Menali, AAVSO Technical Assistant (MGQ)

Aaron Price, AAVSO Technical Assistant (PAH)

Mike Simonsen, AAVSO Observer (SXN)

2A. SPECIAL OBSERVING REQUESTS BY JAM: RXTE CAMPAIGN ON 0006-12 WW CET

Astronomer Dr. Darren Baskill of Leicester University, Leicester, UK, will be observing the dwarf nova WW Ceti with the Rossi X-ray Timing Explorer (RXTE) from May 10 through August 9, 2002 for a duration of 3,000 seconds each day. He has requested the assistance of AAVSO observers to monitor WW Cet during his X-ray campaign so that the visual and X-ray data may be correlated.

For more information consult AAVSO Alert Notice #295 at the URL below:

<http://www.aavso.org/alerts/alert295/alert295text.stm>

Observers are urged to monitor the variable closely, particularly during intervals when RXTE is observing WW Cet. During such time, observations should be made every 5 minutes. Observers should start observing WW Cet 15 minutes before and should continue 15 minutes after scheduled RXTE runs. When RXTE is not actively observing the dwarf nova, observations should be made every hour.

WW Cet charts are available through our web site at the following address:

http://www.aavso.org/charts/CET/WW_CET

Please use these charts to observe this variable, and report your observations of 0006-12 WW Cet to AAVSO Headquarters. Please make sure to indicate which comparison stars you used and report the time of your observations to 4 decimals of the JD.

Good coverage from our observers is extremely important to the success of this observing program. Please observe WW Cet as frequently as possible. More information about this project will become available as time progresses. Watch the AAVSO home page (<http://www.aavso.org>) for updates and reminders!

2B. SPECIAL OBSERVING REQUESTS BY JAM: 1813+49 AM HER TO BE OBSERVED BY FUSE SATELLITE

NASA's Far Ultraviolet Spectroscopic Explorer (FUSE) satellite will observe AM Her on May 11 and 12th in order to better understand the effects of magnetic fields on the UV spectrum and to more accurately measure the temperature and abundances of metals in the photosphere when the system is in a low mass transfer rate (quiescent) state. The astronomer colleagues Drs. Martin Barstow, Boris Gaensicke, and Knox Long would greatly appreciate good optical coverage of this system, during and after the FUSE observations. Please monitor AM Her closely.

3. COMMENTS AND OBSERVING REQUESTS ON LPVs -- J. A, Mattei

Below are some comments on and requests for observations of long period variables that are observable at this time. Observers are urged to use AAVSO Bulletin 65, Predicted Maxima and Minima Dates for

Long Period Variables for 2002, to plan their observing, and also particularly to see if more observations can be obtained for those stars indicated in the Bulletin as needing more observations. One caution: often the stars that need more observations do not have adequate comparison star sequence i.e lacking faint comparison stars, thus they are quite challenging to observe and so should be observed only by experienced observers.

1911-04 UZ Hya 9.1-14.1

This long period variable has just passed minimum and needs observations as it brightens slowly to maximum, predicted for around the end of August.

0918-68 RW Car <9.3-15.0>

This southern Mira variable is slowly fading to minimum, predicted for the end of June. Our southern observers with large-aperture telescopes are strongly urged to monitor this star so we may obtain positive observations as it fades to minimum.

0925-51 Y Vel <9.5-13.8>

This southern Mira variable is in need of observations badly as it brightens towards maximum, predicted for mid-June. There is a 'd' scale AAVSO standard chart with a fairly good comparison star sequence for the brighter end of the star's range.

0940-23 RR Hya <9.3-14.4>

Another southern long period variable in need of observations as it is rising to maximum, predicted for the later part of July. There are 'b' and 'd' AAVSO standard charts with a good sequence.

0949-53 Z Vel <9.0-14.3> Another southern Mira variable, presently fading to minimum predicted for early June, that is in desperate need of observations from our southern observers with large-aperture telescopes. Please go for this star!

0955-63 RV Car <11.3-16.2>

Yet another southern Mira variable in need of observations at all phases, particularly as it is fading to and is around minimum, predicted for mid-June. There is an AAVSO 'd' scale standard chart. Unfortunately, it does not have faint comparison star magnitudes, so we ask our southern observers to do the best they can to observe this star while it is faint.

1010-58A Z Car <10.7-15.2>

Another southern variable that we bring to the attention of our southern observers for more observations as the star brightens slowly to its maximum, predicted for mid-September. There is an AAVSO 'd' scale chart that does not have faint comparison star magnitudes, so we ask our observers to do the best they can.

1032-70 RZ Car <10.0-15.4>

This southern variable has quite a lot of scatter in its light curve. The scatter may be due to the use of comparison star sequences from different sources. Another plea to our southern observers to monitor this star as it slowly brightens to maximum, predicted for the beginning of June. The comparison star sequence for the brighter end on the 'd' AAVSO chart is fairly good.

1136+39 RU UMa 8.3-15.1

This northern Mira variable needs more observations as it brightens towards

its maximum, predicted for the end of June. There are 'b', 'd', and 'e' scale AAVSO preliminary charts that have a fairly good comparison star sequence towards the brighter end of the light curve.

1144-41 X Cen <8.0-13.4>

Yet another southern variable in urgent need of observations as the star slowly brightens to maximum, predicted for the beginning of July. There is a 'd' scale AAVSO standard chart for this star that has a fairly good comparison star sequence towards the brighter end.

1209-05 T Vir <9.6-14.2>

The maxima and minima levels and the amplitude of this Mira variable have been slowly fading and declining since 1997. In particular, the last two cycles have had decreasing amplitude. The amplitude of the last cycle, which was not very well covered, was only three magnitudes, whereas in general the mean amplitude of the star is almost 5 magnitudes. T Vir is slowly brightening

to maximum, predicted for early August. There are 'b' and 'd' scale AAVSO standard charts. Observers are strongly urged to monitor this star closely in order to determine its behavior.

1233+66 RV Dra <9.2-13.7>

This circumpolar Mira variable has an interesting light curve with varying maxima and, particularly, minima levels. The cycle before the current one had a maximum that was 1.5 magnitudes fainter than the mean maximum brightness.

This star is slowly fading to minimum, predicted for mid-June. Observers with large-aperture telescopes are strongly urged to monitor this star while it is faint so we may obtain a good record of its minimum brightness.

1302-12 RV Vir <10.8-14.9>

Another Mira variable with varying levels of maxima, minima, and amplitude. We didn't have many observations during the last cycle because the star was in its observing gap. The cycle before that was also not well monitored, but appeared to have a small amplitude, much smaller than the previous cycle. Observers are strongly urged to monitor this star closely during the current cycle as it slowly brightens to maximum, predicted for mid-June.

1322-02 V Vir <8.9-14.3>

This long period variable has not been well monitored for the most recent couple of cycles. Its predicted maximum is for early May. Observers are strongly urged to keep a close eye on V Vir, particularly while it is still bright and as it slowly fades to minimum. There are 'd' and 'e' standard AAVSO

charts with a fairly good sequence.

1324-22 R Hya <4.5-9.5>

This is one of the very few long period variables that has had a drastic period decrease in the last couple of centuries. It is the AAVSO Variable Star of the Month for May 2002 (<http://www.aavso.org/vstar/vsotm/>), and I bring it to the attention of our observers to learn more about this fascinating (and very easy to observe) Mira variable. It is slowly brightening to maximum, predicted for the end of July.

1331-55 RV Cen <7.7-10.3>

This fascinating southern Mira variable is a carbon star with an N spectrum, and thus is very red. It has extremely varying maximum and minimum levels and amplitude. The amplitude of the recent cycles has been very much decreased,

with the star varying between about 7.8 and 9.6. We bring RV Cen to the attention of our southern observers to keep a close eye on it so its behavior may be well monitored.

1232+73 T UMi <9.2-14.0> This circumpolar Mira variable has had a drastic period decrease in recent decades that we wrote about in the Journal of the AAVSO (Mattei and Foster, 1995, JAAVSO, Vol. 23, 106; read it online via <http://www.aavso.org/journal/starindex.stm#ursaminor>). From the recent cycles, there is a hint that both the period and the amplitude may be increasing. If this is the case, it is particularly interesting in respect to the period evolution and the evolution of the star in general. Please keep a very close eye so we may have complete coverage of T UMi to determine its behavior.

1342-36 RT Cen <9.0-12.7>

Another very interesting southern Mira variable with varying maxima and, particularly, minima levels, as well as varying amplitude and period. The amplitude of the recent cycles has been quite decreased, varying only from 9.6 to 12. We bring it to the attention of our southern observers, and request them please to keep a close eye on it so we may determine its long-term behavior.

1343-27 W Hya 5.7 - 10.0

This star, with a good photoelectric sequence on a 'b' scale AAVSO chart, needs observations at all phases. Currently, it is slowly brightening to maximum, predicted for mid-August.

1353-04 SY Vir 9.0-15.0

The light curve of this Mira variable has a significant number of discrepant observations. There is a good photoelectric sequence on 'b' and 'd' AAVSO preliminary charts. Observers are urged to be particularly careful in making estimates of this star, slowly brightening to maximum predicted for the end of May.

1405-28 RU Hya <8.4-14.0>

Another long period variable with varying maxima and minima brightnesses. The minimum in March 2001 was very faint, and the maximum that followed it was also faint. This star needs more observations to determine its behavior. Observers are strongly urged to monitor it using the standard 'd' scale AAVSO chart.

4. CVs and UNUSUAL OBJECTS FOR SPRING

By Mike Simonsen (SXN)

With the Big Dipper riding high in the north this time of year, now is a good time to discuss some interesting targets in Ursa Major.

0803+62 SU UMa (UGSU) This is the prototypical dwarf nova of its class. Normal outbursts have maxima around 13.0, but this dwarf nova also exhibits superoutbursts that can last up to two weeks and are much brighter. Stars in this class exhibit superhumps during superoutbursts, a small periodic fluctuation of several tenths of a magnitude. The unique aspect of superhumps is that the period of fluctuation is 2-3% longer than the orbital period of the system. By observing superhumps, you can derive the orbital period of the system.

(Please see CCD Views Special Issue: May 5, 2002 for the special observing requests of the star.)

For a star that is fairly well covered by observers, this can be a difficult field to navigate. The 14th magnitude comps on the charts are probably much fainter than the chart indicates. This can be disconcerting when trying to make positive estimates in the faint range.

0829+53 SW UMa (UGSU) Although outbursts are rare, this CV can get as bright as 9.7 when it decides to show off! If you observe this UG in outburst notify AAVSO immediately, and then go back to the telescope and observe it some more! It may be a long time before you see it again.

0831+48 EI UMa (NL) This is another star targeted by XMM satellite in the coming weeks. This nova-like variable does not exhibit large amplitude fluctuations from my experience, but it does seem to be different every time I observe it. Usually hovering around 14th magnitude, I have seen it as bright as 13.7 on occasion.

0846+58 BZ UMa (UGSU:) This possible UGSU doesn't seem to have normal outbursts and superoutbursts. The last few outbursts have reached 11th magnitude, and no intermediate outbursts have been observed. This one could be ripe for another bright outburst soon. It will probably be a visual observer that notifies the astronomical community when the next outburst begins.

0940+52 ER UMa (UGSU(ER)) This one goes on the "hyper-active list". It is more unusual to observe this star at minimum than in some state of activity. The prototype of a sub-group of UGSU stars, this type of system has frequent outbursts and superoutbursts and exhibits superhumps at all phases of outburst, not just during superoutbursts.

0959+68 CH UMa (UGSS) The most recent outburst of this star reached 11.5. At minimum it fluctuates around 14.8-15.0. It is therefore possible that a visual observer, lucky enough to catch the very beginning of an outburst, could track a major portion of a rise to maximum.

This is also one of my "star-party stars". While everyone is oohing and aahing over M81 and M82, I nudge the scope south a bit and make an observation of CH UMa.

1010+72 CI UMa (UGSU) Not too long ago I was able to scratch this off my 'never been seen list'. It rises to around 13.8 at maximum. It is the northernmost star in a little kite shaped asterism formed by a triangle of comp stars. Just a little further away from M82 than CH UMa, and to the north.

A quick hop from here takes you to the field of DH and CP Dra, which have the awesome spiral galaxy NGC3147 in the same field of view.

1014+53 KS UMa (UGSU) Formerly known as SBS1017+533. When I first started observing this CV I assumed it was one of those obscure, rarely outbursting, faint CVs because of its exotic name. I couldn't have been more wrong. Over this past winter I have observed several outbursts of this system and a superoutburst in the 12th magnitude range. There are excellent new charts with a CCD(V) sequence for this active star that make it a pleasure to observe.

1037+58 IY UMa (UGSU+E) A much anticipated outburst of this CV, formerly known as TmzV85, occurred on May 7. Due to the fact it is an eclipsing UGSU, this one is of particular interest to astronomers studying the orbital periods of dwarf novae. Eclipses are quite dramatic, and can be followed visually. It's easy to find, and a good sequence and charts make this a worthwhile stop in your nightly CV monitoring program.

1051+50 CY UMa (UGSU) This UGSU can get as bright as 12th magnitude in outburst, or a touch brighter. It's located in a fairly recognizable asterism with several good comp stars around it. Be careful not to mistake it for the 131 comp star, a careless mistake I have made before.

1058+38 MARK 421 (BLLAC) BL Lac objects are active galactic nuclei that have rather featureless spectra but exhibit rapid fluctuations in brightness.

Current models explaining the characteristics of AGN all include a supermassive black hole surrounded by an accretion disc and clouds of ionized gases moving at high velocities.

The fact that amateurs can make valuable visual observations of these objects is almost as amazing as the fact that we can see them at all. Markarian 421 is believed to be 400 million light years away.

This one is easy to find because it resides very close to a 6th magnitude star. This same star can make observing Markarian 421 a challenge when faint.

1112+48 KV UMa (XT) Formerly called XTEJ1118+480, this is a black hole binary system in our galaxy, that behaves much like a quasar. These objects have come to be known as microquasars. They exhibit the same kinds of behaviors as very distant quasars, so they are very interesting to astronomers.

Amateur observations of these systems are important because visible light flare-ups have preceded activity at other wavelengths.

The last optical outburst was in the 12th magnitude range and lasted for months. No one knows when the next outburst may happen.

1147+49 BC UMa (UGSU) This is another infrequent burster. I recall one superoutburst and one normal outburst in the past three years. It does get into the 11th magnitude range at super-maximum, so it will be hard to miss.

Next issue, I will explain what all these bizarre names and prefixes stand for. Like, XTEJ, Markarian, SBS, RXSJ, TmzV, etc.

5. AN EYEPIECE VIEW FROM STAMFORD OBSERVATORY

By Mike Simonsen SXN

Not many large telescopes in permanent observatories actually have eyepieces attached to the business end of the scope. Most have CCD cameras or other instrument packages attached, and viewing is done remotely at a computer monitor.

At Stamford Observatory the 22" Gregory Maksutov has a whole turret of eyepieces for the observer to select from. For two nights in November last

year, I had the privilege of observing with the big scope at Stamford, the old fashioned way, through the eyepiece.

I had been invited by Charles Scovil, the observatory director, to come visit him and observe at Stamford. So on Sunday, after the AAVSO fall meeting in Cambridge, I found myself tailgating Chaz and his other guest, Marc Beismans, across the countryside from Boston to Stamford.

We arrived at the observatory around dusk. Chaz gave Marc and me a tour of the facility and then marched us up the stairs to the dome.

I had seen pictures of the telescope before, but I wasn't prepared for the sight of the 22" up close when the lights were flipped on. It's massive! The solid tube, painted silver, adorned with a number of guide scopes, finder scopes and the eyepiece turret, looks like a giant cannon out of some Buck Rogers fantasy. I was also surprised at the thickness and extreme curvature of the meniscus, and the relatively small size of the secondary.

The control panel has digital setting circles, a joystick for telescope control, controls for rotating the dome and a switch for pumping oil into the bearing of the huge fork mount. The telescope makes a slow, rhythmic squeaking sound when the drive is engaged. A sound I never did get completely comfortable with.

In spite of hazy skies and a nearly full moon, we took turns observing at the eyepiece of the 22. We observed a fading nova, V2275 Cyg, and RX Lyr, an LPV Chaz and Marc were working on new charts for. This is an interesting star if for no other reason than the ghostly smoke ring, M57, resides in the same medium power field.

One of the things I had looked forward to was making positive observations of some of my program CVs at minimum. Observations that are usually difficult or impossible in my 10" scope. As luck would have it SS Aur, U Gem, KT Per and TZ Per, four of my intended targets, all went into outburst during my visit! Just as well, since sky conditions favored brighter objects that first night.

Skies deteriorated quickly, so we closed up the dome and went to dinner, hoping for a change in local conditions. It rained while we were eating and never did improve that night, so we spent the rest of the morning in the inner sanctum of chart making for the AAVSO, Charles' office on the second floor of the observatory.

Monday evening looked very promising as I pulled up to the observatory. The skies had begun to clear and I could almost smell the Canadian high pressure that is my best friend back home in Michigan.

Charles and Marc were already there and had opened the dome and readied the scope for another night of observing. Unfortunately, Charles had other plans for the night and asked if I would mind observing alone, since he and Marc were busy preparing the new charts for RX Lyr.

I tried not to giggle as I found myself saying, "No, I won't mind having this huge telescope to myself all night!"

It happened to be my birthday, and I couldn't have dreamed of a better gift. At least that was what I thought at the time.

After a couple hours of being blissfully absorbed in observing in Andromeda and Perseus, I suddenly began having trouble seeing faint stars. I thought maybe it was time to take a break or that the weather had taken a turn when I looked out the dome slot and the sky appeared orange. Or was that red?

It quickly dawned on me as I ran out on to the observation deck that Chaz had ordered up one of the most dramatic auroral displays I had ever witnessed in honor of my birthday! We all stood outside under the blazing red, orange and green lights for a long time.

In spite of the moon and occasional auroral flare-ups later that night, I was able to log several 16th magnitude observations. The faintest positive observation was in one of my favorite fields in Auriga, ST Aur. I was able to see it at or near minimum at 15.7. After making an estimate of RX And in outburst I scanned over M31, quite a sight in a 22" scope.

At times it was necessary to re-align the digital circles on a bright star. I was impressed by the different colors of these stars blazing in the eyepiece of the 22" Mak. Betelgeuse, Aldeberan, Vega and Altair left lasting impressions on my mind and dark adaptation!

Closing up for the night felt strangely familiar as I capped the end of the scope, parked it in the home position, closed the dome slot and turned off the power. Of course, the cap for my scope looks like a Frisbee, whereas the cap for the 22" is more the size of a garbage can lid!

I slept with a smile on my face that morning.

I hope to return some time soon (around new moon) and do it all again.

6. CHART UPDATES

New charts were issued for the following stars since March 1. For each chart scale reversed charts are also available:

F, G - V4334 SGR (Sakurai's Object)

E - AK CNC

F - SN 2002BS

F - SN 2002BO

F - GK PER

B,D,E - Y MON (BI Mon + IY Mon also in the field)

Also, in March a set of 239 new charts were issued for faint objects, mainly CV's using photometry from A. Henden and sequences selected by B. Sumner.

Below is a list the objects for which we have new e and/or f-scale charts:

3C 232

3C 279 VIR

3C66A AND

AP LIB

AX CAP

AY LAC

BF ERI

BV PUP

BX PUP

BY CAM

CG CAM

CG DRA

CI CAM

CI GEM

CT HYA

DW CNC

EG LAC	ES AQL
EV AQR	FBS 1719
FBS 1735	FG SER
FT CAM	GW LIB
GY HYA	HP LIB
HS VIR	HT CAM
IR COM	KS UMA
KV DRA	KZ GEM
LS AND	LY HYA
MM HYA	NS PER
NY SER	NSV 895
CG CMA	DK CAS
PQ AQL	PQ ORI
PR HER	PT PER
PV PER	PV PER
QR AND	QW SER
RY SER	TK5 LYR
TU CRT	TU TRI
TX TRI	TY PSA
UY PUP	V1113 CYG
V1141 AQL	V1316 CYG
V1454 CYG	V2400 OPH
V336 PER	V368 PEG
V378 PEG	V381 LAC
V391 SCT	V402 AND
V452 CAS	V478 HER
V630 CAS	V650 ORI
V699 OPH	V823 CYG
VY SCL	VZ PYX
W COM	WY TRI
XZ ERI	DO VUL
WZ CMA	TY VUL

More information on this list is available at:

<http://charts.aavso.org/hs.shtml>

As always, all charts are available through our online chart search engine at: <http://charts.aavso.org/searchcharts.shtml>

7. AAVSO LONG-TERM LIGHT CURVES

AAVSO long-term light curves on variable stars define the behavior pattern of variable stars and provide basic sets of observations that may be used to correlate spectroscopic, photometric, and polarimetric multiwavelength data, and to match theoretical stellar models.

The AAVSO Monograph format enables us to present long-term variable star behavior, with each monograph containing 20 or more years of computer-generated light curves on one star. Each Supplement to a Monograph continues the light curves of the same star, bringing them more up-to-date.

For more information on published AAVSO Monographs, please visit the following page:

<http://www.aavso.org/monograph/index.stm>

Here is a list of the monographs and supplements we feature on our web

page:

AAVSO Monograph 1: SS Cygni 1896 - 1985

Supplement 1: 1986-1990

Supplement 2: 1991-1995

Supplement 3: 1996-2000 (Published, soon will be on the web too)

AAVSO Monograph 2: U Geminorum 1855 - 1985

Supplement 1: 1986 - 1990

Supplement 2: 1991 - 1995

AAVSO Monograph 3: R Scuti 1963 - 1985

Supplement 1: 1986 - 1990

Supplement 2: 1991 - 1995

Supplement 3: 1996 - 2000 (Published, soon will be on the web too)

AAVSO Monograph 4: R Coronae Borealis 1843 - 1990

Supplement 1: 1991 - 1995

Supplement 2: 1996 - 2000 (Published, soon will be on the web too)

AAVSO Monograph 5: RY Sagittarii 1892 - 1990

Supplement 1: 1991 - 1995

Supplement 2: 1996 - 2000 (Published, soon will be on the web too)

AAVSO Monograph 6: Z Camelopardalis 1927 - 1995

Supplement 1: 1996 - 2000 (Published, soon will be on the web too)

AAVSO Monograph 7: RS Ophiuchi 1890 - 1995

Supplement 1: 1996 - 2000 (Published, soon will be on the web too)

AAVSO Monograph 8: AH Herculis 1963 - 1995

Supplement 1: 1996 - 2000 (Published, soon will be on the web too)

AAVSO Monograph 9: RX Andromedae 1963 - 1995

Supplement 1: 1996-2000 (Published, soon will be on the web too)

AAVSO Monograph 10: AM Herculis 1977 - 1995

Supplement 1: 1996 - 2000 (Published, soon will be on the web too)

AAVSO Monograph 11: PU Vulpeculae 1979 - 1995

Supplement 1: 1996 - 2000 (Published, soon will be on the web too)

AAVSO Monograph 12: TT Arietis 1974 - 1995

AAVSO Monograph 13: GK Persei 1901 - 1902 and 1963 - 1995

Supplement 1: 1996 - 2000 (Published, soon will be on the web too)

We are preparing more monographs for publication. Stay tuned for updates and announcements on our web page.

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Good observing!

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