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OBSERVATIONS OF VARIABLES

Date: 19 August 2014

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Name of the object:

AE UMa

Remarks:

The data were reduced by using dark, bias, flat-field frames and differential photometry method was used in order to data reduction. The times of maxima listed in IBVS 6199-t2.txt were calculated by fitting a parabolic curve to the data around the maxima.

Date: 27 April 2015

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Name of the object:

28 Tau

Remarks:

Within the time span January 2012 to February 2015 a group of 24 observers of the ARAS community (`http://www.astrosurf.com/aras/`) was successful in documenting four periastron passages of the Be binary 28 Tau. The main purpose of the campaign was to observe the change in radial velocity (RV, `6199-f2.jpg` – the figures are available in the online version) along with the V/R ratio of the Hα double peak profile (`6199-f3.jpg`). For this campaign Littrow spectrographs of the type LHIRES III with different spectral resolving power R from 8000 to 17000 resp. were used. The reproducibility of our Hα RV measurements of one spectrum during one night can be indicated by application of the line profile mirror method with $\pm$2 km/s.

Our observation results represent only the Be-shell time period JD 2459942 to 2457083. With our campaign we were particularly interested in seeing what happens with changes of the V/R ratio around the minimum radial velocity epoch near the periastron as a consequence of the attractive force of the secondary in the 218-d-binary. Our detailed Hα RV representation in `6199-f4.jpg` shows a clear jump in the positive (red shift) direction around JD 2457060, which is similar to that found in the RV data (JD 2452860 to 2454186) of Nemravova et al. (2010).

Because of this unusual jump in our observations, we checked this RV behaviour with the line FeII 6516 Å, which is formed closer to the central star, and to compare it to the RV at the outer (Hα) radius of the disk. In `6199-f5.jpg` we see an impressive indication that in fact the FeII 6516 RV is decreasing more or less evenly and undisturbed to the periastron at approx. JD 2457076.4. According to the recently determined orbital elements (e.g.: $e = 0.596$; $\omega = 148°$; $T_{\mathrm{periastron}} = 2440040\overset{\mathrm{d}}{.}4$) by Nemravova et al. (2010) at the Hα absorption core, we had to expect this periastron at JD 2457077.0 .

The unusual V/R variation as an appearance of two separate minimum components (at JD 2457060 & 2457076) near the periastron in `6199-f6.jpg` seems to indicate a distortion and deformation process of the two disks (Hirata 2007 & Tanaka et al. 2007).

In spite of this blur in the periastron time definition, we tried to calculate a period analysis both of RV and V/R. First, `6199-f7.jpg` shows the PDM (phase dispersed minimization) RV period calculation of all observed periastron in this paper, which led to a period of 227.4 days. `6199-f8.jpg` shows the corresponding phase diagram. Our larger period results from the fact that we were able to observe in detail RV as well as V/R within certain periastron campaigns, which led to a larger dispersion of the exact periastron time itself. The more or less sharp V/R definition in our observations (except for the last monitored periastron), reflects [with the PDM period analysis (`6199-f9.jpg`) and its phase diagram (`6199-f10.jpg`)] fairly exactly the 217.9 day orbital period of Katahira et al. (1996) and Nemravova et al. (2010).

The following ARAS observer contributed with their spectra: Th. Garrel, C. Sawicki, J. Montier, J. S. Devaux, M. Pujol, M. Leonardi, V. Desnaux, P. Berardi, Ch. Buil, K. Graham, B. Mauclaire, F. Houpert, E. Pollmann, N. Montigiani, M. Mannucci, J. N. Therry, J. Guarro, Th. Lemoult, O. Garde, St. Charbonnel, T. Lester, A. Favaro, Dong Li, P. Fosanelli.

Date: 18 November 2015

Reported by:

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Name of the object:

GSC 03122-02426

Remarks:

Detected on 28 September 2012 in the FoV of V563 Lyr.

RA(J2000)	Dec(J2000)	type
18 45 44.86	+40 17 20.2	EW

Magnitude	Period	Epoch
14.9(Rmag -USNO A2.0)	0.30050(9)	2456200.2458(7)

Cross-identification(s):
GSC 03122:02426 = TYC 3122-2426-1 = 2MASS J18454487+4017197 = USNO-A2.0 1275-10327334 = GSC2.2 N030012326476 = CSS J184544.8+401722

Name of the object:
GSC 05581-00047

Remarks:

Detected on 24 May 2015 in the FoV of the blazar PKS 1510-089

RA(J2000)	Dec(J2000)	type
15 13 16.41	-09 08 41.4	RRLyr

Magnitude	Period	Epoch
14.1(Rmag -USNO A2.0)	0.36869(5)	2457163.4136(5)

Cross-identification(s):
GSC 05581:00047 = USNO-A2.0 0750-08849885 = GSC2.2 S2310211460 = 2MASS J15131640-0908413 = HE 1510-0857 = CSS J151316.4-090841

Date: 8 June 2016

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Name of the object:
V720 Cas

Remarks:

A total of 40 observations from 2013 January 3 to December 23, and 37 observations from 2014 January 01 to October 9 of the semiregular pulsating carbon star V720 Cas have been obtained in the V (Johnson) photometric band. Our observations are obtained in the context of a long-term variability study of a sample of dwarf novae and long-period variable stars at the Porziano Astronomical Observatory, Mount Subasio, Assisi, Italy. Our data confirms the period of 455 days.

V720 Cas (also known as IRAS 00422+5310, TAV 0042+53, CGCS 105, GSC 3655.01254, 2MASS J00450706+5326473, WISE J004507.06+532647.7) was initially classified as a carbon star from low resolution IRAS spectra (Olnon et al. 1986) in the 8-22μm mid-infrared band by Little-Marenin et al. (1987). A carbon star is a late-type bright and red AGB giant star whose atmosphere contains more carbon than oxygen, those combining in the upper layers of the star forming CO and consuming all the oxygen in the atmosphere. Free carbon atoms form other carbon compounds, giving the star a pitchy atmosphere and a strikingly ruby red appearance. They are particularly bright at IR and millimetre bands. Beyond IRAS, V720 Cas was, in fact, observed also by the WISE and AKARI infrared space satellites. The IRAS low-resolution mid-IR spectrum class is 4.5, the flux density $F_{12\mu\mathrm{m}} = 16.3\,\mathrm{Jy}$, the mid-IR color indices are $[25-12] = -0.751$ mag and $[60-25] = -0.991$ mag while was not possible to detect OH maser lines (Sivagnanam et al. 1990). Noguchi et al. (1991) presented first $JHKL$ bands and 3.1μm (SiC) photometry. Rudolf (1993) analysed about 300 Sonneberg observatory plates to reveal semiregular variation in the light curve with cycle lengths of 420 days (for the interval 1971-1986) and 456 days (from 1988). Later Kazarovets and Samus (1997) describes variations for V720 Cas spanning from $P = 9.6$ mag to $P = 12.5$ mag ($P = 374$nm filter). The observation of hydrogen cyanide (HCN) in the millimetre spectrum of V720 Cas with the IRAM 30m millimeter telescope, has confirmed the carbon-rich character (Groenewegen et al. 2002a). The star has $m_{(bol)} = 8.08$, $M_{(bol)} = -5.00$ and distance from earth of 4.11 kpc, while the gas mass loss rate, derived from the CO spectral line, is $dM/dt^{(gas)} = 3.61 \times 10^{-6}$ $M_\odot$ yr^{-1}, and the dust mass loss, derived from the IRAS 60μm flux density, is $dM/dt^{(dust)} = 9.80 \times 10^{-9}$ $M_\odot$ yr^{-1} (Groenevegen et al. 2002b). The star was more recently observed also in near-IR bands: $J = 7.28 \pm 0.02$, $H = 5.62 \pm 0.02$, $K = 4.41 \pm 0.02$ (Chen et al. 2012).

Our observations have been collected with the 110 mm refractor ED telescope of the Porziano Observatory equipped with a SBIG CCD Camera (Kodak KAF 402 ME 762×512 pixel) and standard V Johnson broad band filter (Bessell 1979). The exposure time was 240s or 300s. The CCD frames were first corrected for debiasing and flat-fielding, then processed for aperture photometry. To calibrate the V magnitudes we used stars in the Tycho-2 catalogue (Høg et al. 2000). In the year 2013 the star varied in luminosity from 14.14 ± 0.05 to 12.81 ± 0.04 with an amplitude of 1.33 mag. In 2014 the variation was of 2 magnitudes from 13.72 ± 0.01 to $11.72 + 0.02$.

The period analysis of our 2013-2014 total light curve is performed using the Lomb-Scargle periodogram (LSP) technique (Lomb 1976, Scargle 1982). Our analysis results in dominating periodic signal peak (Fig. 3) corresponding to a period of 455 days, in agreement with the findings of Rudolf (1993). Figure 1 shows the finding chart with the comparison stars used for the photometry. Table 1 reports the V photometric Tycho-2 values and standard deviations for the selected comparison stars. Table 2 gives the V magnitudes of V720 Cas, and the Figure 2 presents the V light curve of V720 Cas during the 2013-2014 interval. Finally Figure 3 includes a plot of the LSP of our light curve.

Date: 5 August 2016

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Name of the object:
V1118 Ori

Remarks:
Variability of V1118 Ori was discovered in 1983 (Hurst, Chanal, 1984), and the star was soon recognized as an EXor or Subfuor (Parsamian & Gasparian, 1987, Herbig, 1990). After reaching maximum brightness, EXors usually keep their brightness constant with some fluctuations for several months and then fade to minimum. During the outburst the stellar spectra have strong emissions which become less intensive in quiet state. The evidence, that V1118 Ori was not included in the catalog of Hα emission stars in the region of the Orion Nebula (Parsamian, Chavira, 1982) speaks in favour of that V1118 Ori was not a strong Hα variable before the first outburst. Till to now only two stars – V1118 Ori and V1143 Ori – have been known as EXors in the Orion association region. It seems that the activity of such kind is very short in the life of T Tau stars, although the duration of each outburst is about 1.5-2.0 years. We have information on outbursts for the years 1983-1984 (Kosai, 1983, Hurst et al. 1984, Parsamian & Gasparian, 1987), 1988-1990 (Parsamian et al., 1993, 1996), 1992-1994 (Garcia Garcia, Mampaso & Parsamian, 1995, Parsamian et al., 2002), 1996-1998 (Hayakawa et al., 1998, Garcia Garcia & Parsamian, 2000), 2004-2006 (Waagen et al., 2005, Williams et al. 2005, Garcia Garcia et al., 2006), 2007-2008 (Garcia Garcia & Parsamian, 2008). A new outburst took place in September 2015 (Giannini et al., 2016). Our observations cover the period 2014-2016 (Fig. 1). During this period the brightness of the star changed from $V = 17.1$ and reached a maximum of $V = 13.8$ in 13.11.2015. It seems that the outburst frequency become lower during last years. Further observations would show behaviour of star during this outburst. Our observations are going to be continued.

Date: 14 September 2016

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Name of the object:
GSC2.3 N1Y0039176

Remarks:

RA(J2000)	Dec(J2000)	Type	Vmag.	Period	Epoch
20 00 46.395	+05 47 47.97	EW	17.18-17.85	0.276853 d	2457602.5001 ±0.0

Variation of the star was first reported at the AAVSO Variable Star Index (VSX): `https://www.aavso.org/vsx/index.php?view=detail.top&oid=473895`.
All the observations have been carried out by using the EEV CCD 42-40 camera with a format of 2048×2048 pixels, cooled by liquid nitrogen attached on the Newtonian focus of the 1.88-m Kottamia reflector telescope in Egypt.
the location of Kottamia Astronomical Observatory (KAO) as follows:
Latitude: 29°56′02.″43 N
Longitude: 31°49′40.″10 E
Height: 467 m
International code = 088

Cross-identification(s):
GSC2.3 N1Y0039176 = 2MASS J20004638+0547475 = USNO-B1.0 0957-0507660

Date: 21 September 2016

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Name of the object:
1SWASP J200059.78+054408.9

Remarks:

RA(J2000)	Dec(J2000)	Type	Vmag.	Period	Epoch
20 00 59.78	+05 44 08.9	EW	15.014-15.737	0.205691 d	2457604.37104 ±0.0010

Variation of the star was discovered by Lohr et al. (2013).
All the observations have been carried out by using the EEV CCD 42-40 camera with a format of 2048×2048 pixels, cooled by liquid nitrogen attached on the Newtonian focus of the 1.88-m Kottamia reflector telescope in Egypt.
the location of Kottamia Astronomical Observatory (KAO) as follows:
Latitude: 29°56′02.″43 N
Longitude: 31°49′40.″10 E
Height: 467 m
International code = 088

Cross-identification(s):
1SWASP J200059.78+054408.9 = UCAC4 479-113657 = 2MASS J20005975+0544073

Date: 23 January 2017

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Name of the object:

V0367 Cam

Remarks:

RA(J2000)	Dec(J2000)	Type
$04^{\rm h}40^{\rm m}55^{\rm s}.1822$	$+53°38'06''.524$	DSCT

Observatory and Telescope:
Observatory of Research Institute for Astronomy and Astrophysics of Maragha (RIAAM), Iran (Longitude: 46.238°E, Latitude: 37.3835°N, Elevation: 1472.29 meters) a 12-inch Cassegrain Mead telescope

Detector:
SBIG STX–16803 CCD camera, 16 million pixels (4096×4096 pix) with a pixel length of 9 μm and field of view of 42 arcmin^2.

Filter(s):
Johnson V and R filters

Date(s) of observation(s):
The V band observations of V0367 Cam were carried out on 22 and 23 October and 4 November 2016 and the R band observations of V0367 Cam were carried out on 23 October and 4 November 2016.

Comparison star(s):
TYC 3733-390-1 (2MASS J04413568+5335117)

Check star(s):
ChK1: GSC 03733-00063
ChK2: GSC 03733-00152
ChK3: GSC 03733-00327

Transformed to a standard system (Johnson $UBVRI$).
Standard stars (field) used: BD+53 796C

V0367 Cam (also known as GSC 03733-01115, 2MASS J04405518+5338066, TYC 3733- 1115-1) was discovered in 2006 by Otero (2007) as a DSCT star with a period of 0.121596 d. Again it was confirmed as a DSCT star by Kazarovets et al. (2011) in The 80th Name-list of Variable Stars. V0367 Cam was observed in 2013 and the epochs were reported by Wils et al. (2014) The light curves of GSC 03733-01115 were extracted using MaxIm Dl version 5.03 software independently for each filter.

We searched for the main pulsation frequencies and their harmonics. The period analysis was performed using Period04 software (Lenz & Breger 2005) for obtaining exact results. The analysis of the original dataset confirmed the large contribution of the average value of f_1 term, i.e., 8.2144 d^{-1} on two filters and the period of 0.121737 d was obtained. Considering of the residuals reveals the first harmonic of f_1, averaged on V and R filters as $2f_1 = 16.3889$ d^{-1}.

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References:

Bessell, F.M., 1979, *PASP*, **91**, 589 DOI
Chen, P.S., Yang X. H., 2012, *AJ*, **143**, 36 DOI
Garcia Garcia, J., Mampaso, A., Parsamian E., 1995, *IBVS*, **4268**
Garcia Garcia, J., Parsamian, E. S., 2000, *IBVS*, **4925**
Garcia Garcia, J., Parsamian, E. S., 2008, *IBVS*, **5829**
Garcia Garcia, J., Parsamian, E. S., Velazquez J.C. et al., 2006, *IBVS*, **5691**
Giannini, T., Lorenzetti, D., Antoniucci, S. et al., 2016, *ApJL*, **819**, L5 DOI
Groenewegen, M.A.T., Sevenster, M., Spoon H.W.W., & Pérez, I., 2002a, *A&A*, **390**, 501 DOI
Groenewegen, M.A.T., Sevenster, M., Spoon H.W.W., & Pérez, I., 2002b, *A&A*, **390**, 511 DOI
Hayakawa T., Ueda T., Uemura M., et al., 1998, *IBVS*, **4615**
Herbig, G.H., 1990, Low Mass Star Formation and Pre-Main Sequence Objects, ed. Bo Reipurth, Munchen, 223
Hirata, R., 2007, *ASP Conf. Ser.*, **361**, 267
Høg, E., Fabricius, C., Makarov, V.V., et al., 2000, *A&A*, **355**, L27
Hurst, G.M., Chanal, D., et al., 1984, *IAU Circ.*, **3924**
Katahira, J.-I., Hirata, R., Ito, M., Katoh, M., Ballereau, D., Chauville, J., 1996, *PASJ*, **48**, 317 DOI
Kazarovets, E. V. et al, 2011, *IBVS*, **5969**
Kazarovets, E.V., Samus, N.N., 1997, *IBVS*, **4471**
Kosai, H., 1983, *IAU Circ.*, **3763**
Lenz, P., Breger, M., 2005, *CoAst*, **146**, 53 DOI
Little-Marenin, I.R., Ramsay, M.E, Stephenson, C.B, Little, S.J, Price, S. D., 1987, *AJ*, **93**, 663 DOI
Lohr, M. E., Norton, A. J., Kolb, U. C., Maxted, P. F. L., Todd, I., West, R. G., 2013, *A&A*, **549**, A86 DOI
Lomb, N.R., 1976, *Ap&SS*, **39**, 447 DOI
Nemravova, J., Harmanec, P., Kubat, J., Koubsky, P., Iliev, L., Yang, S., Ribeiro, J., Slechta, M., Kotkova, L., Wolf, M., Skoda, P., 2010, *A&A*, **516**, A80 DOI
Noguchi, K., Sun, J., & Wang, G., 1991, *PASJ*, **43**, 275
Olnon, F.M., Raimond, E., Neugebauer, G., et al., 1986, *A&AS*, **65**, 607
Otero, S. A., 2007, *Open European Journal on Variable Stars*, **56**, 1
Parsamian, E.S., Chavira, E., 1982, *Bol. Inst. Tonantzintla*, **3**, 69
Parsamian, E.S., Gasparian, K.G., 1987, *Astrophysics*, **27**, 598 DOI
Parsamian, E.S., Gasparian, K.G., Oganian G.B. et al., 1996, *Astrophysics*, **39**, 201 DOI
Parsamian, E.S., Ibragimov, M.A., Oganian G.B. et al., 1993, *Astrophysics*, **36**, 12 DOI
Parsamian, E. S., Mujica, R., Corral L., et al., 2002, *Astrophysics*, **45**, 393 DOI
Rudolf, E., 1993, *Mitt. Veränderliche Sterne*, **12**, 165
Scargle, J.D., 1982, *ApJ*, **263**, 835 DOI
Sivagnanam, P., Le Squeren, A.M., Minh, F.T., & Braz M.A., 1990, *A&A*, **233**, 112
Tanaka, K., Sadakane, K., Narusava, S.-Y., et al., 2007, *PASJ*, **59**, L35 DOI
Waagen, E. O., Williams, P., de Scala, G. et al., 2005, *IAU Circ.*, **8626**
Wils, P. et al., 2014, *IBVS*, **6122**
Williams, P., Bembrick, C., Lee, S., 2005, *IAU Circ.*, **8460**