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UBVR PHOTOMETRY OF THE ECLIPSING BINARY STAR V443 CYGNI

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Name of the object:
V443 Cyg = AN 540.1936 = GSC 03152-1283 = P5411

Equatorial coordinates:	**Equinox:**
R.A.= $20^h27^m45^s$ **DEC.**= $+38°41'24''$	2000.0

Observatory and telescope:
Maidanak Observatory of Astronomical Institute of Uzbek Academy of Sciences, 0.6-m Cassegrain telescope.

Detector:	Single channel photometer.

Filter(s):	$UBVR_J$

Date(s) of the observation(s):
2000.07.23 - 2000.08.26; 2001.07.13 - 2001.08.22.

Comparison star(s):	SAO 70055 = BD $+38°4098$ = GSC 03152-0050721

Check star(s):	SAO 70047 = BD $+38°4092$ = GSC 03152-0025322

Transformed to a standard system:	Yes
Standard stars (field) used:	SA 113 (Landolt,1983)

Availability of the data:
Upon request

Type of variability:	EA

V443 Cyg was discovered to be variable by Hoffmeister (1936). It was classified as a short period eclipsing star with $0^d.83110$ period and light changes between 12.3−12.9 pg (Richter, 1958; Schewick, 1941). We have been monitoring the binary for a total of 45 nights from July to August in 2000 and 2001. Table 1 lists the standard V magnitude and color indices of field stars near the variable. The photometric values have been

determined by our measurements of the standards in the SA 113 (Landolt, 1983). We have found the following moments of primary minimum: HJD 2451774.5032 ± 0.0049, 2452115.2329 ± 0.0040. The analysis of light curves proved that the period of the binary is twice longer than initially determined. Using 53 moments of minima published in the literature and our determinations (Table 2 for primary minima, Table 3 for secondary ones), the following new ephemeris for V433 Cyg was yielded:

$$\text{Min I} = \text{HJD2452115.2316} + 1^{\text{d}}.66220545 \times \text{E}$$
$$\pm\ 0.0038 \pm 0.00000043$$

Table 1

Star	V	$U-B$	$B-V$	$V-R$	Sp
Comparison(s)	8.915±0.011	0.462 ±0.024	0.900±0.014	0.551±0.006	B91b
Check(s)	8.436±0.004	1.048 ±0.006	1.124±0.002	0.850 ±0.003	K2

Table 2

Observer	HJD 2400000+	E	$O-C$
Richter (1958)	26206.465	−15587	0.027
Schewick (1941)	27298.497	−14930	−0.007
Richter (1958)	27298.500	−14930	−0.004
Schewick (1941)	27313.464	−14921	−0.000
Richter (1958)	27313.467	−14921	0.002
	28435.434	−14246	−0.018
	28819.424	−14015	0.002
	30375.253	−13079	0.006
	31703.363	−12280	0.014
	32775.456	−11635	−0.015
	33204.308	−11377	−0.012
	33887.457	−10966	−0.029
	35275.449	−10131	0.020
	35629.479	−9918	0.001
Romano (1969)	36751.500	−9243	0.033
	37130.430	−9015	−0.019
	37190.320	−8979	0.031
	37848.507	−8583	−0.015
	39788.292	−7416	−0.024
	40117.429	−7218	−0.004
Borovicka (1992)	47670.496	−2674	0.002
Dedoch (1992)	47670.501	−2674	0.007
Zejda et al. (1995)	48222.346	−2342	0.000
	48222.351	−2342	0.004
	49171.452	−1771	−0.013
	49171.460	−1771	−0.005
	49171.468	−1771	0.002
	49181.433	−1765	−0.006
	49186.418	−1762	−0.007
	49186.420	−1762	−0.005
	49186.425	−1762	−0.000
	49186.426	−1762	0.000
	49186.426	−1762	0.000
	49595.350	−1516	0.022
Diethelm (1995)	49919.457	−1321	−0.000
This paper	51774.503(5)	−205	0.023
	52115.233(4)	0	0.001

Table 3

Observer	HJD 2400000+	E	$O-C$
Schewick (1941)	25841.571	−15806.5	−0.010
Richter (1958)	29488.456	−13612.5	−0.004
	35369.359	−10074.5	0.016
	36072.453	−9651.5	−0.003
	36127.322	−9618.5	0.013
	36137.293	−9612.5	0.011
Romano (1969)	37149.543	−9003.5	−0.022
	37174.522	−8988.5	0.024
	37224.385	−8958.5	0.021
	37523.504	−8778.5	−0.057
	39699.373	−7469.5	−0.015
	40053.426	−7256.5	−0.011
Zejda et al. (1995)	49599.483	−1513.5	−0.000
Safar, Zejda (2000a)	50234.446	−1131.5	0.000
Dedoch (1997)	50583.499	−921.5	−0.010
Safar, Zejda (2000b)	50947.5353	−702.5	0.003

The phased U,B,V,R light curves are presented in Figure 1. The depth of the primary and secondary minima are $0\overset{m}{.}65$ and $0\overset{m}{.}46$, respectively. Table 4 represents photometric values for main phases of the binary's light curves. The brightness levels at the first and second quadratures are slightly different.

Table 4

Ph	V	$U-B$	$B-V$	$V-R$
Max.	12.30	0.05	0.57	0.46
Min. I	12.95	0.01	0.66	0.50
Min. II	12.76	0.05	0.51	0.45

Acknowledgements:
During this study we have made use of the Astronomical Data Centre SIMBAD (Strasbourg, France)

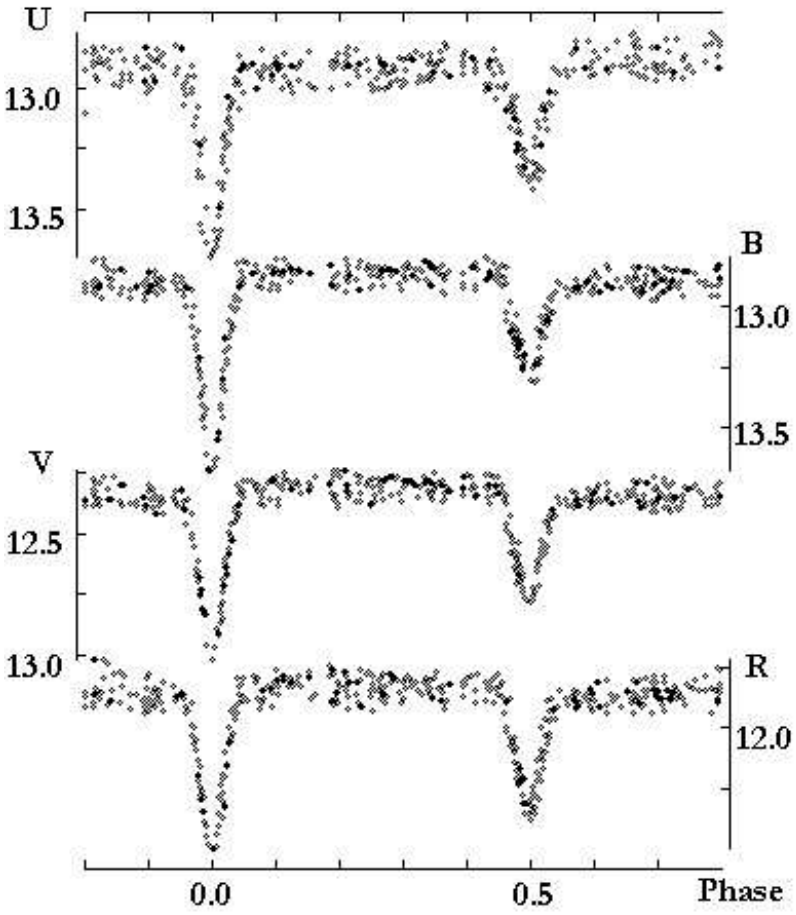

Figure 1. The phased U,B,V,R light curves.

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