COMMISSIONS 27 AND 42 OF THE IAU
INFORMATION BULLETIN ON VARIABLE STARS

Number 4894

Konkoly Observatory
Budapest
26 April 2000

HU ISSN 0374 – 0676

PHOTOMETRY OF STARS IN THE FIELD OF CQ TAURI

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CQ Tauri (HD 36910) is a variable pre-main-sequence star ranging mostly between visual magnitudes $9^{\rm m}$ and $11\overset{\rm m}{.}5$. The AAVSO 'standard' (d)-scale chart for this star (AAVSO 2000) shows magnitudes from the survey by Kalandadze (1964), who provided photographic UBV photometry and MK spectral types for some 3600 stars in the Taurus/Gemini Milky Way. As a check on the magnitude zero-point and scale, I have done $V/(b-y)$ photometry of many of the sequence stars in the field. The results were originally distributed via the 'vsnet' list-server (Skiff 1995).

I observed the stars on the UT dates 31 October and 30 November 1994 using the Lowell 53-cm photometric telescope, $29''$ aperture, and Strömgren y and b filters. A total of 23 and 30 primary and secondary standards were observed on the respective nights whose residuals averaged $0\overset{\rm m}{.}007$ in both V and $b-y$. Mean extinction coefficients (Lockwood & Thompson 1986) were applied in the reductions.

Table 1 shows the results for the stars in order of decreasing brightness. Observations of CQ Tauri on the two nights are shown in the first entry. An asterisk by the star name indicates a note following the table. The positions are from Tycho-2 (Høg *et al.* 2000). Most of the stars were observed on both nights, and the *rms* dispersion of these are given in the second line of the relevant entries.

The V magnitudes of Kalandadze, although internally consistent, show a zero-point error of about $-0\overset{\rm m}{.}2$ (Kalandadze too bright). The MK types shown in the table are mostly from this source as well. These appear to be quite reliable, and show the effects of reddening by the Taurus dark clouds in the middle distance. A later survey of the same region by Chargeishvili (1988) gives similar types for the same stars. Visual observations of CQ Tauri in the AAVSO database (`http://www.aavso.org/aavso/curvegenerator.shtml`) are consistent with my V magnitudes made on the same dates despite the offset in the chart zero-point, which perhaps compensates roughly for the color term between V and the dark-adapted visual response. The two measurements of the carbon star HD 244898 suggest it is a small-amplitude variable. The observations by Paupers *et al.* (1994) show it about $0\overset{\rm m}{.}3$ brighter, so variability seems certain. The star is not especially red.

Table 1: Photometry of stars in the field of CQ Tauri

Name	RA (2000) Dec	V	$b-y$	n	spec	Remarks
CQ Tauri*	$5^h35^m58^s.46$ +24°44′54″.1	11.040	0.517		F2IVe	HD 36910
		10.413	0.534			
HD 36758	5 35 03.57 +24 17 26.8	6.829	0.653	2	G8	IRAS 05320+2415
		.002	.000			
HD 37012	5 36 28.06 +24 22 06.4	8.003	1.267	2	K5II	
		.004	.001			
HD 245084*	5 35 23.67 +25 01 20.3	8.563	0.773	2	G8III	
		.004	.006			
HD 245225	5 36 07.87 +24 28 42.3	9.129	1.042	2	K3III	
		.001	.008			
HD 245133	5 35 33.62 +24 31 56.2	9.268	0.301	2	B9V	
		.003	.004			
HD 244897	5 34 23.70 +24 55 21.8	9.670	0.983	2	K0	GSC 1852-0119
		.003	.011			
HD 245180*	5 35 49.70 +24 55 22.8	9.812	0.227	2	B3V	
		.001	.009			
HD 244898*	5 34 25.47 +24 51 11.8	10.065	1.020		C4,4	CGCS 990
		10.112	1.012			
HD 245030*	5 35 02.87 +24 29 04.9	10.132	0.357	1	G2IV	
HD 245224	5 36 04.13 +24 31 23.1	10.298	0.375	2	A5	
		.004	.015			
HD 245029*	5 35 05.05 +24 37 05.4	10.501	0.560	1	F5	
BD+24°879	5 36 25.04 +24 47 52.2	10.893	0.355	2	B3IIIe	LS V +24°3
		.004	.001			
GSC 1865-1630*	5 35 56.11 +24 42 47.6	11.457	0.438	2	G5:	
		.003	.004			
GSC 1865-1722	5 36 35.96 +24 44 03.7	11.878	0.440	1	A1	

Notes

CQ Tauri	observations on 31 Oct 1994 UT (JD 2449656.9) and 30 Nov 1994 UT (JD 2449686.9).
HD 245084	$V = 8.55$ (Yoss *et al.* 1991).
HD 245180	close double; $V = 9.814$, $b-y = 0.223$ (Westin 1982).
HD 244898	observations on 31 Oct 1994 UT (JD 2449656.9) and 30 Nov 1994 UT (JD 2449686.9). $V = 9.73$ (Paupers *et al.* 1994).
HD 245030	$V = 10.12$ (Yoss *et al.* 1991).
HD 245029	BD+24°867 = GSC 1865-1744.
GSC 1865-1630	probably a dwarf on the basis of $b-y$ color and modest proper motion.

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