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PHOTOELECTRIC PHOTOMETRY OF TWO SMALL-AMPLITUDE RED VARIABLES

D. H. Kaiser reported the photographic discovery of two 7th-magnitude red variables, which were designated DHK 12 and DHK 15 in his discovery lists (Kaiser et al. 1990, Kaiser 1990). These stars were thought to be SR type, but the periods were undetermined. To confirm the type and define the periods, I have made differential photoelectric observations of these stars during the past two seasons using a 28-cm Schmidt-Cassegrain telescope, Optec SSP-3 solid-state photometer, and V filter. The observations have been corrected for differential extinction and transformed to V of the UBV system.

DHK 12 = BD +29°3730, HD 186860, SAO 68801, IRC +30391, NSV 12387

Six photoelectric observations from the 1989 season were reported earlier (Williams 1990). Table I presents 13 additional observations made on 12 nights in 1990. Figure 1 shows the 1990 light curve.

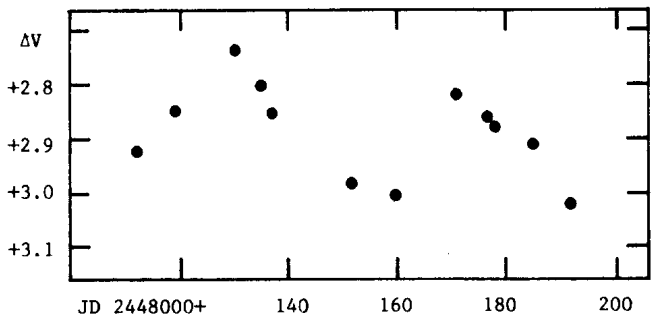

Figure 1. DHK 12

TABLE I. DHK 12

HJD 2440000+	(n)	ΔV	s.d.	HJD	(n)	ΔV	s.d.
8111.598	(3)	+2.924	±0.006	8170.599	(3)	+2.817	±0.018
8118.603	(3)	2.848	0.005	8176.605	(3)	2.850	0.019
8129.614	(3)	2.737	0.008	.633	(3)	2.864	0.009
8134.597	(3)	2.799	0.013	8177.593	(3)	2.868	0.006
8136.642	(3)	2.846	0.005	8184.609	(3)	2.911	0.010
8151.579	(3)	2.982	0.004	8191.627	(3)	3.018	0.013
8159.549	(3)	3.003	0.008				

The comparison star was Phi Cygni. Single measures of the check star HR 7505 on 12 nights show a constant difference, the standard deviation of a single observation from the mean being ±0.007. Based on Phi Cyg's magnitude, 4.69 V in The Bright Star Catalogue (Hoffleit and Jaschek 1982), the variable's observed range during the two seasons was 7.43 - 7.83 V. A Discrete Fourier Transform analysis of all the observations indicates a period of 43.0 days.

DHK 15 = BD +10°2067, HD 85720, SAO 98835

Table II presents 17 observations from the 1989-90 and 1990-91 seasons. Figure 2 is the 1990-91 light curve. The comparison star was 31 Leonis. Twenty measures of the check star SAO 118138 on 17 nights have a standard deviation of a single observation from the mean of ±0.019. Based on 31 Leo's magnitude, 4.37 V, in the Bright Star Catalogue, the variable's observed range was 7.78 - 8.13 V. DFT analysis yields a primary peak at P = 62.3 days and a secondary peak near 52 days. The second peak may

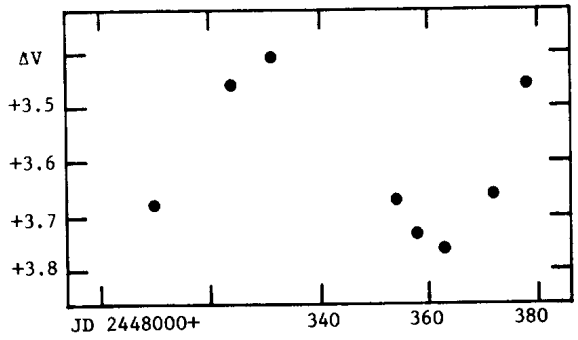

Figure 2. DHK 15

TABLE II. DHK 15

HJD 2440000+	(n)	ΔV	s.d.	HJD	(n)	ΔV	s.d.
7869.847	(4)	+3.583	±0.009	8309.684	(6)	+3.682	±0.017
7953.697	(3)	3.527	0.011	8323.631	(3)	3.459	0.005
7954.675	(4)	3.486	0.005	8330.607	(3)	3.410	0.004
7971.635	(3)	3.552	0.028	8353.593	(5)	3.671	0.007
7977.674	(4)	3.587	0.011	8357.692	(3)	3.735	0.003
8000.643	(3)	3.535	0.021	8362.632	(3)	3.762	0.001
8019.663	(4)	3.473	0.005	8371.625	(3)	3.662	0.010
8041.601	(3)	3.609	0.006	8377.609	(3)	3.460	0.018
8043.612	(3)	3.636	0.012				

represent a difference in the semiregular variable's actual period during the two brief seasons of observation or a 1-cycle per year alias.

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